

COMMISSIONER
GATZUNIS, DPS

COMMENTS

RECOMMENDS ADOPTION
OF THE DRAFT

7TH EDITION 1 & 2

FAMILY DWELLING CODE

Good Afternoon Mr. Chairman and Board members,

I could never have imagined myself today standing here addressing you and the Board of Building Regulations and Standards regarding the Seventh edition of our State Building Code.

On November 12, 2002 I sat as the Board's Chairman listening to testimony on this very code. A lot has happened since then. I now stand before you as the DPS Commissioner with a little different perspective relative to the code development and the promulgation process.

At the November 2002 Hearing there was great concern that the Board was somehow trying to extract authority from other statutorily appointed Boards or commissions with the issuance of the new Seventh Edition Building Code. I knew then and I can assure you now that is not the case.

In order to ensure that these concerns were immediately and permanently addressed, I as the Board's chairman, along with Rob Anderson, Tom Riley and Brian Gore personally met with each Board that had expressed those concerns. We reviewed the controversial language word by word, line by line, editing the text until all parties were satisfied.

As we worked to resolve outstanding issues and time passed, the ICC promulgated their 2003 family of international codes. Resultantly, BBRS staff and Technical Advisory Committees were sent back to once again review the new ICC language and appropriately update the DRAFT 7th Edition 1 & 2 Family Building Code and 7th Edition "Commercial" Building Code in order to be consistent with the 2003 version of the International Residential Code and International Building Code. Additionally, during this period Governor Jane Swift issued executive Order 440 establishing the Building Code Coordinating Council. The BCCC is co-chaired by the Executive Office of Public Safety and the Executive Office of Administration and Finance. The Council is comprised of members of DPS, DFS, AAB, the Boards of Plumbers and Gasfitters the Board of Electricians and other state agencies, all involved in the promulgation of "construction" codes. For the last several years, this Council has met on almost a monthly basis. During this period, Council members have reviewed many regulations, but I think all members will agree that the majority of its time to date has been spent on reviewing the proposed 1 & 2 Family Code that is before you here today.

(In fact, the proposed 7th Edition 1 & 2 Family Building Code being presented at this Public Hearing today, is the first “cover-to-cover” construction code to have completed the “BCCC Process”).

You may hear from other speakers here today expressing concerns about particular words or phrases that are contained in this proposed code and it is likely that editorial corrections will undoubtedly be required, for such is the nature of technical code development; additionally, through this Public Hearing process you may take testimony requesting that certain technical requirements be incorporated or removed. Remember that this proposed Code reflects current National Model Building Code philosophy.

As you are all well aware codes are ever changing documents. Technological advances will cause the code to change on a regular basis. We cannot hope that things will stop changing nor should we wait until there is absolute certainty that this or any proposed code is error-free. We must adapt and keep pace, or be left behind.

Many changes have been made; jurisdictional issues have addressed, at least to the extent practicable; other revisions can and will be made in the future as necessary.

To date, thousands, if not tens of thousands of hours have been spent developing, reviewing and revising this code document, many of these hours were my own, and we still have the base “commercial” code left to complete. It is time that we make this 7th Edition 1 & 2 Family Building Code a reality.

I do not want to imply that the code review and revision process is not important and well intentioned; it surely is. However, at some point, we must agree to disagree if necessary, in order to advance the code, even if we believe there are blemishes. It is my firm opinion that time is better spent educating code enforcers and code users in helping them understand the sometimes complex language, rather than debating code minutia. Education is the key to a successful product.

It is for these reasons that I urge you to vote for the immediate adoption of the 7th Edition 1 & 2 Family Building Code.

Thank you

P. J. MORIARTY
& ASSOC, INC.

COMMENTS

NUMEROUS RELATING TO:

C51-ADMINISTRATION;

C52-DEFINITIONS;

C53-BUILDING PLANNING;

APPENDICES

PAUL J. MORIARTY AND ASSOCIATES, INC.

CONSTRUCTION CODE SPECIALISTS
22 WASHINGTON STREET
NORWELL, MASSACHUSETTS 02061

(781) 871-3200
FAX (781) 871-3223

May 21, 2006

COMMONWEALTH OF MASSACHUSETTS
BOARD OF BUILDING REGULATIONS AND STANDARDS
One Ashburton Place – Room 1301
Boston, Massachusetts 02108

Re: Proposed 7th Edition of the Building Code for One- and Two-Family Dwellings
Comments and Suggestions on Draft Regulations

Gentlemen:

I have briefly reviewed the draft Regulations for the 7th edition of the State's Building Code for the One-and Two-Family Dwelling Code and I would like to present to you a few of my comments:

1. §5102.5.1 – 6th line down: The word “substantial” is missing before the word “altered”. §5102.5.3 in the 4th line down uses the words “substantial alteration”. I believe that the courts would conclude that since the word “substantial” appears in §5102.5.3 and not in §5102.5.1, under the same sub-heading of “Existing buildings”, that such deletion was intentional and **any** alteration would kick in the applicable code. This I am sure is not intended. It is therefore suggested that §5102.5.1 be amended to read “constructed or *substantially* altered”
2. §5110.7 – The second paragraph seems to be repeated in §5111.11. It is felt that the second paragraph of §5111.11 should be deleted or merely reference §5110.7
3. §5111.5 – This section dealing with the disposal of debris resulting from the “...demolition, renovation, rehabilitation, or other alteration of a detached one-or two-family dwelling...” is taken directly from M.G.L. c. 40 §54. This section of the law and/or code does not regulate the disposal of debris from any **new construction** of a one or two family dwelling. I suggest a clarification by adding the word “construction” before the word “demolition”.
4. §5115.3 – This section refers to M.G.L c, 168A. I have been unsuccessful in locating M.G.L. c. 168A and have concluded that it is a misprint. However, if a correction is made, it is pointed out that the readers and enforcers of this code usually do not have access to the General Laws, it may therefore be helpful to at least insert the heading or subject matter of the correct General Law.

PAUL J. MORIARTY AND ASSOCIATES

5. §5115.4 – The reading of this section allows a conclusion that only the completion of the dwelling requires a Certificate of Occupancy (C.O.). There are many instances where an altered building/structure should require a new Certificate, such as certain alterations and additions of structures (§5120.2). There are also many instances where it is only necessary to close out the permit after the completion of the work which does not require a new C.O. It is suggested that the first line be amended in part as follows:

“Upon completion *of the permitted work* of the detached on-or two family dwelling...”

and strike the word “and” prior to the words “...before the issuance of the...” and insert the word “or” “before the issuance of the”.

6a. §5120.2 – This section appears to require a “Certificate of Completion” for **any and all** work when a structure is altered. The definition of “Alteration” does not include “repair or addition”. A repair will not present a problem but an “addition” to a structure does not appear to require a C.O. under §5120.1 nor is it required to receive a “Certificate of Completion” under §5120.2.

6b. §5120.2 – Perhaps a definition should be inserted in Chapter 2 for a “Certificate of Completion” since it does not appear to be defined, or perhaps change in this section the “Certificate of Completion” to “Certificate of Approval” which is defined in Chapter 2.

7. §5122.1 – In this section appeal to the State Building Code Appeals Board attempts to preclude appeals taken pursuant to §5121.0 (Unsafe structures). This code cannot do away with the provisions of M.G.L. c. 143 §100 wherein it is stated:

Whoever is aggrieved by an interpretation, order, requirement, direction or failure to act by any state or local agency or any person or state or local agency charged with the administration or enforcement of the state building code or any of its rules and regulations, ...may within forty-five days after the service of notice thereof appeal from such interpretation, order, requirement, direction, or failure to act to the appeals board. ...

It is well settled law that a regulation cannot take away any remedy and/or rights given by a state statute, as is being attempted here. Thus this exception is invalid as written. However, an appeal from General Laws chapter 143 sections 6, 7, 8, 9, 9A, 10, 11 and 12, cannot be appealed to the Building Code Appeals Board.

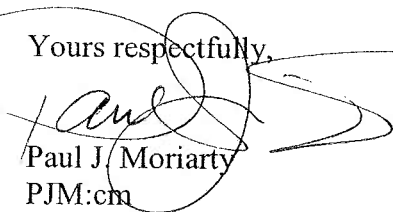
8. Chapter 2 – Definitions: The definition of “Owner” under subsection © should read “lessee under a written *lease* agreement” not “let” agreement.

PAUL J. MORIARTY AND ASSOCIATES

9. §5311.6 – Ramps: Where ramps are necessary (not required) in one and two family dwellings for persons with disabilities, in many instances it is impossible to comply with the requirements of the slope, landings and/or handrails as regulated in §5311.6. Not only is it nearly impossible to comply with the slope, landings and/or handrails as listed in 521 CMR, but 521 CMR specifically may not regulate the slope, landings and/or handrails for one and two family dwellings. Exception 2 of §5311.6.3, refers the reader to 521 CMR. Since 521 CMR is not applicable in one or two family dwellings, Exception 2 is meaningless. Ramps should be regulated in 780 CMR §5311.6, but ramps designed for handicap persons should be far less restrictive. Should compliance for the handicapped be difficult to achieve, appeal would be necessary to the Building Code Appeals Board and not to the Architectural Access Board (521 CMR), since it has no jurisdiction. It is suggested that further consideration be given to this section.

10. The Appendices seem to be mislabeled in the Table of Contents or the individual appendices.

Yours respectfully,



Paul J. Moriarty
PJM:cm

TOWN OF CHARLTON
BLD. DEPT.

COMMENTS

NUMEROUS -

CS1 - ADMINISTRATION

CS3 - BUILDING PLANNING

CS8 - ROOF-CEILING CONSTRUCTION



Town of Charlton

www.townofcharlton.net

**BUILDING COMMISSIONER
ZONING ENFORCEMENT OFFICER**

**37 MAIN STREET
CHARLTON, MA 01507
508-248-2241
FAX: 508-248-2373**

May 19, 2006

Robert Anderson
Deputy Administrator
BBRS Room 1301
One Asburton Place
McCormack State Office Building
Boston, MA 02108

By: E-mail and regular mail

Dear Mr. Anderson,

RE: Proposed One and Two Family, 7th edition of the Massachusetts State Building Code.

After reviewing the draft electronic version of the One and Two Family, Massachusetts State Building Code, congratulations are in order to all those who have worked on this document. We are well on the way to adopting a code that is user friendly to both Code Officials and Builders alike.

With the understanding that development of a building code is a long and difficult process and that every word, comma, period and statement has been analyzed by a multitude of persons, the following comments and suggestions are offered to be reviewed, and for inclusion in the code.

1. Consideration should be give to the inclusion of a statement in section 51 that mandates if an item that is not required by the code is installed, that the item meet the requirements of the code.

Example: A builder erects a deck with an elevation of 24 inches above the grade below, therefore is not required to install guards (5312.1), however the builder installs a guard. Most people leaning against the guard on the 24 inch deck, will expect it to perform like a guard installed on a deck 30 inches above the grade below, restraining them from going over the edge and/or preventing entrapment of small children's heads in between vertical balustrade.

Justification: The 6th Edition includes language if a nonrequired fire protection system is installed “Any *fire protection system* or portion thereof not required by 780 CMR shall be permitted to be finished for partial or complete protection provided that such installed system meets applicable requirements of 780 CMR.” (901.3).

We offer the citizens of the Commonwealth the insurance that if there is a suppression system installed, that system will function in accordance with known standards, we should offer the same citizen the same peace of mind that if they lean against a guard they will not tumble over the edge.

2. Consideration should be given to consistency for the guard opening limitations in section 5312.2 and exceptions. Why on the open side of a stair tread is the opening limitation less than that of a stairway or raised floor area? If the 4 3/8 inch requirement purpose is to mandate 2 balusters per tread, the statement should be made “a minimum of 2 balusters are required per tread.” Or the minimum space for all guards should be 4 3/8 inches.

Justification: The sphere dimension in the model code is 4 inches; Massachusetts proposed 4 inch spacing during the adoption of the 6th edition which was rejected by the building community, Massachusetts then adopted 5 inch spacing from the 5th edition. If we were truly concerned with the possibility of small children getting body parts stuck between the ornamentation we would use 4 inch sphere spacing. Additionally mixed spacing will become an enforcement nightmare.

3. Section 5311.4.2 needs to clarify whether the second means of egress requires a side-hinged door.

The text for section specifically states the 36 inch door needs to be side-hinged, then goes on to say “the 32-inch secondary door may provide egress through an attached garage...” with no mention of side hinged or sliding options. Section 5311.4.2 further states “other exterior doors in excess of the of the two required exit doors... need not comply with...” (5311.4.2)

Justification: Code Word of January 1998 report that a sliding type door is acceptable as a means of egress, which may be used by some as justification to allow other than hinged door arrangements for secondary means of egress. Is it the opinion of this building official that a positive statement for the operating arrangement of the second exit door needs to be stated in the code.

4. Section 5802.1.3.1(1) states "The identification mark of an approved agency in accordance with section 6703.5 of the 6th edition..."

There seems to be a typographical error in the above statement, section 67 of the proposed 7th edition deals with combustion air, there is not a section 67 in the 6th edition of the Building Code.

Justification: Referring to a code that is being phased out may be a disservice to the users. Addition if the One and Two family code is truly being promulgated as a stand alone code, all references should be included in that code.

Respectfully,

Curtis Meskus
Building Commissioner
Zoning Enforcement Officer

BSA

COMMENTS

PROPOSES MODIFICATION

TO STAIR WINDER
REQUIREMENTS

• C53-55311.5.3.2

Boston Society of Architects

Residential Design Committee

52 Broad Street

Boston MA

RECEIVED

2006 JUN 19 PM 3:16

Department of
Public Safety

24 May 2006

Massachusetts Board of Building Regulations and Standards

Att: Robert Anderson

Re: Winders 5311.5.3.2

Dear Robert Anderson,

The Residential Design Committee at the BSA is proposing revisions to section 5311.5.3.2 Winders of the Building Code for One- and Two- Family Dwellings.

We have provided the existing code, the proposed draft code by the BBRS, and our proposal showing revisions to the BBRS proposal.

Existing 3603.13.4

3603.13.4 Winders. Winders are permitted, provided that the width of the tread at a point not more than 12 inches (305 mm) from the side where the treads are narrower is *equal to the tread depth of the straight run portion of the stairs* and the minimum width of any tread is not less than 6 inches (152 mm). ...

BBRS Draft 5311.5.3.2

5311.5.3.2 Tread depth. ...Winder treads shall have a minimum tread depth equal to the tread depth of the straight run portion of the stairs measured as above at a point 12 inches (305 mm) from the side where the treads are narrower. Winder treads shall have a minimum tread depth of 6 inches (152 mm) at any point. ...

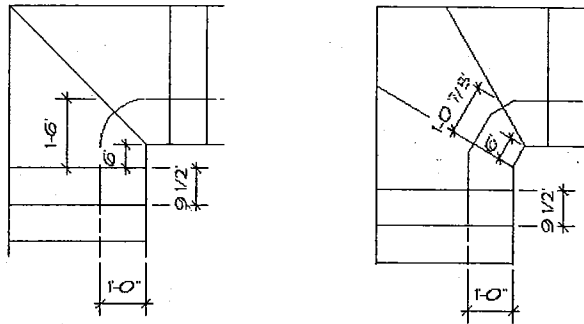
BSA Proposal:

5311.5.3.2 Tread depth. ...Winder treads shall have a minimum tread depth equal to the tread depth of the straight run portion of the stairs measured as above at a point 12 inches (305 mm) from the side where the treads are narrower. Winder treads shall have a minimum tread of 3 inches (72 mm) at any point.

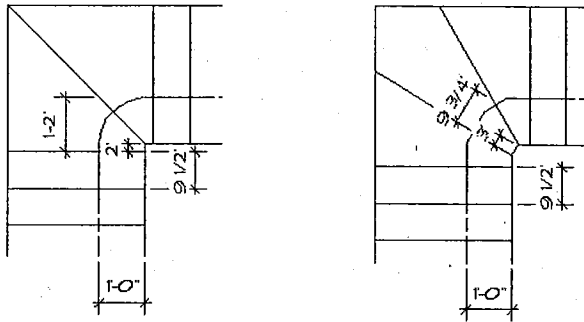
Exception: 45° winders are allowed to go to a minimum of 2 inches (51 mm) at any point.

Conclusion:

It is the intent of the code that the rise/run through the winders be as close as possible to that of the straight run portion of the stair. As the code is currently this is not the case as can be seen in the provided diagram. The proposed revision is aimed at getting closer to the intent of maintaining a uniform rise/run throughout the stair as can be seen in the provided diagram.



Winders based upon current 6th edition and proposed 7th edition One and Two-Family Building Code.



Winders based upon proposed language change.

Thank you for your consideration.

Sincerely,

The Residential Design Committee of the Boston Society of Architects

Thomas A. Downer

Thomas Downer, Co-Chair
Frank Shirley, Co-Chair



Argeo Paul Cellucci
Governor

Jane Swift
Lieutenant Governor

Jane Perlov
Secretary

The Commonwealth of Massachusetts
Executive Office of Public Safety
Board of Building Regulations and Standards
One Ashburton Place - Room 1301
Boston, MA 02108

Tel: (617) 727-7532 Fax: (617) 227-1754

Kentaro Tsutsumi
Chairman

Thomas L. Rogers
Administrator

MASSACHUSETTS STATE BUILDING CODE - CODE AMENDMENT PROPOSAL

Please Print		State Use Only	
Date:	13 June 2006	Date Received:	
Code Section:	5311.5.3.2	Code Change Number::	
Proponent: Residential Design Committee of the Boston Society of Architects			
Address: 52 Broad Street Boston, MA 02109			
Telephone: 617-951-1433		Fax:: 617-951-0845	

Check (3) type of amendment proposed



Change Section as follows



Delete section and substitute as follows



Add new section as follows



Delete section - no substitute

Text of Proposed Amendment::

5311.5.3.2 Tread depth. ...Winder treads shall have a minimum tread depth equal to the tread depth of the straight run portion of the stairs measured as above at a point 12 inches (305 mm) from the side where the treads are narrower. Winder treads shall have a minimum tread of 3 inches (72 mm) at any point.

Exception: 45° winders are allowed to go to a minimum of 2 inches (51 mm) at any point.

Supporting Statements: Include supplementary material - use additional sheets if necessary

See attached letter

STATE FIRE MARSHAL
STEPHEN COAN

COMMENTS

- SPRINKLERING -

C53 - SECTION 5313.4
at SEA

Commonwealth of Massachusetts

Department of Fire Services

May 23, 2006

Hearing 1 & 2 Family Building Code

Stephen D. Coan • Remarks

Thank you for giving me this opportunity to speak to you.

Applaud Board; Ask for Emergency Amendment

I want to applaud the Board for including residential fire sprinklers for the first time for one and two family homes. This initiative is a major breakthrough in how we think about protecting people where they feel safest – at home – but where they are actually at the greatest risk of dying in a fire. However, I ask for an immediate amendment to reduce the trigger from 14,4000 square feet to 7,500 sq. ft. We don't allow a commercial building larger than 7,500 sq ft. to be built without sprinklers why should allow same size homes to go without sprinklers?

Every Citizen Deserves Same Protection from Fire

While I hope you will adopt my proposed amendment requiring sprinklers in homes that are 7,500 sq. feet or larger, even that is a dangerous position to take. It says only people able to afford to live in larger homes deserve this level of fire protection. Frankly, I think that sends the wrong message to the people of the Commonwealth. Every citizen deserves the same protection from fire.

One-half of Fire Deaths in 1- & 2-Family Homes

In 2004, 70% of the 52 fire deaths occurred in residential properties and 70% of residential fire deaths occurred one- and two-family dwellings (25). That means that one-half of all fire deaths are taking place in one- and two-family dwellings.

622 Fire Deaths in Past Decade; 76% or 475 in Residences

In the past decade there have been 622 fire deaths in Massachusetts. Seventy-six percent, or 475, of them occurred in people's homes. If there were something we could do prevent 475 murders you know we would do it in a heartbeat.

Sprinklers Give Time for Escape

Sprinklers significantly increase the life safety for a building's occupants during a fire by giving them more time to get out before being overcome by heat and toxic gases. By controlling the fire it allows occupants a larger window of time to escape. In many cases the sprinkler will actually put out the fire.

Time is the Enemy; Most Fatal fires Occur at Night

Time is your enemy in a fire. Recognize that most fatal fires occur at night when people are asleep and it takes time to wake up enough to realize the smoke alarm is sounding.

Seniors Most at Risk; One-third of Fire Deaths

Seniors account for one in three of every fire deaths. Older adults are often not able to evacuate a building as fast as they once could. Sprinklers will give seniors, children and people with other challenges more time to evacuate safely today and tomorrow.

Sprinklers Are Firefighter Safety

Sprinklers help contain the fire – keeping it smaller so there is less fire for the fire department to extinguish. This makes it less dangerous for the firefighters.

National Numbers Show Thousands Could be Saved

The National Fire Sprinkler Association in a report issued in June 2005, gives us some startling statistics:

- ◆ If Residential Fire Sprinklers were mandated today,
- ◆ In 50 years, 24,000 to 26,000 lives could be saved and 72,000 to 92,000 injuries prevented.

Age of Building Irrelevant; Contents Ignite First

Let us not lose sight of the fact, that it is the contents such as furniture and bedding inside of our homes that first ignite. It is not the structural framing or the wall that usually catches fire first, but the kitchen cabinets from a stove top fire or the upholstered furniture from the cigarette. The argument that fires don't happen in newer buildings is untrue because what we bring into and do inside buildings of any age is the same. We must and we can build homes that provide safety for the people that live in them. The technology is ready and available.

North Andover Successes Leading the Way

As an example of the effectiveness of residential sprinklers, since 1985 the Town of North Andover has required residential sprinklers in over 2,000 homes new homes. In the last 10 years, the Town of North Andover has had two fires in which the activation of a single sprinkler head

dramatically reduced the loss to fire. Residential sprinklers kept the property damage to \$5,000 or less.

USFA Goal to Reduce Fire Deaths 15%, Sprinklers Part of the Solution

The U.S. Fire Administration has set as a goal to reduce fire related deaths by 15% by 2008. In order to accomplish this goal, USFA is providing grants to promote and foster the use of residential sprinklers to reduce the toll of fires. The U.S. Fire Administration is working with several partners to promote the adoption of local ordinances and state codes that require residential sprinklers. This is a national objective that as the state's fire marshal I am working to accomplish in Massachusetts. Builders will look to this board for a consistent statewide requirement rather than meeting a variety of different local ordinances. It will level the playing field.

Invite to See Sprinkler Demo Trailer

In an effort to educate citizens, builders, developers and policymakers alike, the Department of Fire Services has recently received a grant from the U.S. Fire Administration to purchase a combination Fire Safety House and Sprinkler Demonstration Trailer. I will gladly arrange for a demonstration of this trailer at the Board's earliest convenience so you may experience and see how a single sprinkler head can overcome the power and devastation of fire.

Sprinklers are Air Bags for Buildings

Residential sprinklers are the equivalent of air bags in cars. It is time we raise the bar for fire protection equally in all homes.

Create Task Force

I would ask the Board of Building Regulations and Standards to join with the Department of Fire Services to create a joint task force to seriously evaluate and investigate the issues around including residential fire sprinklers in all one- and two-family homes. I foresee this task force being made up of members from your board, the Departments of Public Safety, Fire Services and Environmental Protection, the Board of Fire Prevention Regulations, the Mass. Waterworks Association, the stakeholder industries and others. The goal of this group would be to identify issues and propose solutions. The task force should report back in not more than 12 months to this board with a recommended amendment to the state building code.

Thank you.

F. C. A. M., Inc.

COMMENTS

- ORAL PRESENTATION
@ PUBLIC HEARING
RELATIVE TO
- C53- SECTION 5313.4
SPRINKLING*

(IF ADDITIONAL INFO PROVIDED
SUCH WILL BE POSTED)

* SUPPORTS POSITION OF
STATE FIRE MARSHAL

F.P.A.M., INC.

COMMENTS

• C53 - SECTION 5313.4
SPRINKLERING

Fire Prevention Association of Massachusetts, Inc.

P.O. Box 111, South Yarmouth, MA 02664-0111

Telephone Number: 508-394-7477, FAX: 508-394-0106

Email: fpam@cape.com – Web Site: www.firepreventionofma.com

Established February 1974

Barbara Stone, President -- William A. Greene, Jr., Secretary -- John Phelan, Treasurer

June 19, 2006

Gary Moccia, Chairman
Board of Building Regulations and Standards
1 Ashburton Pl Rm 1301
Boston, MA 02109

RE: Proposed 7th Edition Building Code (One and Two Family Dwellings), sec. 5313.4, Sprinklers

Dear Mr. Moccia,

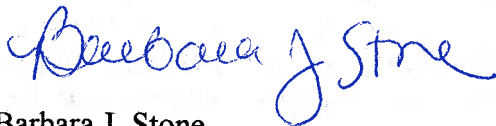
As President of the Fire Prevention Association of Massachusetts, I am writing to offer this Association's support for the proposal by Maurice Pilette, P.E. to the Board for reconsideration of their proposed requirements in Section 5314.4 Sprinklers of the 7th edition of the Building Code. As you are aware, Mr. Pilette's proposal is that the installation of an automatic sprinkler system is required within **all** One and Two family dwellings in accordance with the minimum design and installation requirements as specified in NFPA-13D, 2007 Edition.

Our group is comprised of members of the Fire Service –Chief Officers, Fire Prevention Officers of varied rank, and firefighters, along with Industry representatives. As an Association, we believe that fire sprinkler systems are an essential part of a buildings life safety system. Because we believe this, we feel that requiring sprinklers in buildings based on square footage addresses only a portion of the population we are charged with protecting.

In terms of Applicability: the proposed time line for this requirement to commence with building permits obtained on and after January 1, 2008 provides an opportunity for the fire service and those in the industry a reasonable time frame to prepare ourselves and our citizens for this change. Education will be a key to a successful transition.

If you have any questions or wish to contact me I can be reached at Hanover Fire Dept 781-826-3151 ext. 205 or via email Hanover519@aol.com.

Sincerely yours,



Barbara J. Stone
President FPAM

xc: Fire Marshal Coan
Fire Chiefs Association of MA

RECEIVED
JUN 21 AM 10:25
FIRE PREVENTION ASSOCIATION OF MASSACHUSETTS

NFPA (ROBERT DUVAL) COMMENTS

RECOMMENDS THE
SPRINKLERING OF
ALL NEW CONSTRUCTION
1 & 2 FAMILY BUILDINGS

• C53 - SECTION 5313.4

Robert Duval



**Statement in Support of Amendment
for Providing Automatic Fire Sprinklers
in All New One- & Two-Family Homes**

May 23, 2006

Every year in the United States, more than 3000 lives are lost to fire with thousands more injured and billions of property destroyed. One- and two- family dwellings are the occupancy with the highest death rate due to fire, the highest injury rate due to fire and the highest property damage due to fire. Consistently 80% of the fire victims in the United States are from fires in the home.

Admittedly, the fire death rate has been reduced over the last 30 years, mainly due to increased use of smoke alarms and better public education. But, we have reached a plateau in those efforts and the loss reductions in places around the country that have introduced local residential sprinkler ordinances have proven that the technology will further reduce all categories of loss due fire.

The 2006 editions of the NFPA model codes now contain a requirement for providing sprinkler protection in all new one- & two-family dwellings. This is a first for any of the national model codes. Massachusetts has a similar opportunity to become the first state to endorse a sprinkler requirement in new homes at the state level. NFPA urges the Board of Building Regulations & Standards to bring forward the appendix requirement for residential sprinklers as it promulgates the seventh edition of the Massachusetts One- & Two-Family Dwelling Code.

N. F. S. Assoc., Inc.

COMMENTS

RECOMMENDS SPRINKLERING
OF ALL 1 & 2 FAMILY
BUILDINGS @ EITHER
5000+ SF OR 0+ SF
• CS3-SECTION 5313.4



NATIONAL
FIRE
SPRINKLER
ASSOCIATION, INC.

Dominick G. Kass, CFPS
Northeast Regional Manager

Suite 250, 629 Plank Road
Clifton Park, NY 12065
Office: (518) 373-9392
Fax: (518) 383-3950
Cell Phone: (914) 414-3337
e-mail: kass@nfsa.org

National Headquarters

40 Jon Barrett Road
PO Box 1000
Patterson, New York 12563
(845) 878-4200
FAX: (845) 878-4215



40 JON BARRETT ROAD • P.O. BOX 1000 • PATTERSON, NEW YORK 12563 • (845) 878-4200 • FAX (845) 878-4215
E-MAIL: INFO@NFSA.ORG • WEBSITE: HTTP://WWW.NFSA.ORG

Reply to: Dominick G. Kass CFPS, Northeast Regional Manager

629 Plank Road, Suite 250, Clifton Park, New York 12065

Office: 518-373-9392 FAX: 518-383-3950 Cell: 914-414-3337 Kass@nfsa.org

Serving: New York, Vermont, New Hampshire, Maine, Massachusetts, Rhode Island and Connecticut

Commonwealth of Massachusetts
Board of Building Regulations and Standards
One Ashburton Place, Room 1301
Boston, MA 02108

23 May 06

RE: Proposed 5313.4 for One- and Two-Family Dwellings

The National Fire Sprinkler Association commends the Commonwealth of Massachusetts for addressing the issue of fire protection in "dwellings". The residential fire problem in dwellings can no longer be ignored as witnessed by the "raising of the bar" in both the NFPA and ICC residential codes arenas.

Residential fire sprinklers are also a high priority of the United States Fire Administration to significantly decrease these needless deaths and traumatic injuries.

In the United States, we witnessed in 2004 another 3,190 fire deaths just in single family homes. Nearly \$6 Billion in direct fire loss, 13,700 civilian fire injuries and the economic impacts that we will all pay for in years to come through increased insurance premiums. These numbers have been relatively similar every year since 2000.

A study was done by the NFSA in preparation for the NFPA 13D 2007 edition based on trends and cost. If all 50 states started requiring fire sprinklers in Residential new construction by 01 Jan 2007, by 01 Jan 2057 we will have saved over \$275 Billion in fire loss using today's dollars, saved nearly 30,000 lives, and prevented 93,000 reportable civilian fire injuries.

Many fire sprinkler ordinances around the United States look at a 2,000 sq. ft. threshold or less and many require fire sprinklers in any dwelling above one story. As seen in Chicago suburbs, very few communities have larger than 5,000 sq. ft. thresholds.

Myself, a firefighter of 32 years, most of them in northern New Jersey, I have had the displeasure of having to battle fires in a few of these "Mc-Mansions" and as with other firefighters, we can be easily disoriented in the maze of hallways, rooms, sub-rooms, basements and sub-basements.

Although 14,400 square feet as a threshold for fire sprinkler requirements is a high number and probably will not affect many new homes, it is at least a starting point. As someone who has personally witnessed many times the tragic results of not having fire sprinklers, please consider bringing the threshold to a realistic number such as 5,000 sq. ft. or Zero so that the new code will

N. F. S. Assoc, Inc.

COMMENTS

RECOMMENDS SPRINKLERING
OF ALL 1 & 2 FAMILY
BUILDINGS @ EITHER
5000+ SF OR 0+ SF
• CS3-SECTION 5313.4



NATIONAL
FIRE
SPRINKLER
ASSOCIATION, INC.

Dominick G. Kass, CFPS
Northeast Regional Manager

Suite 250, 629 Plank Road
Clifton Park, NY 12065
Office: (518) 373-9392
Fax: (518) 383-3950
Cell Phone: (914) 414-3337
e-mail: kass@nfsa.org

National Headquarters
40 Jon Barrett Road
PO Box 1000

Patterson, New York 12563
(845) 878-4200
FAX: (845) 878-4215

have some impact on the fire record. NFPA 101 (2006) has addressed this with all new dwelling construction at any square footage.

Building height and creative landscaping can be a tactical challenge for traditional fire suppression forces in attempting to "ladder" a building to perform rescue or suppression duties. On this subject I recommend that a provision be added for any dwelling with a finished third story above fire department access be required to have an automatic fire sprinkler system per NFPA 13D throughout.

You may hear from other sources that it is "older homes" that are burning. Statistics show this is simply, not true. New homes are burning at the same rate as older homes over 20 years old. You may hear that it is education that is needed or different construction materials are needed. This is not the fix. Fire prevention and public educators do their best to get the message out to prevent fire and burn injuries and we have not yet made any significant impact. Different construction materials including fire resistant paints or passive materials may save the walls, but will do nothing to save the occupants or the interior belongings. When the fire is past the "incipient stage", it is already too late.

We have tried every method to "fix stupid" and know well that we cannot, except with the one proven device that can react in seconds to stop a fire where it starts and that is an automatic fire sprinkler.

Respectfully submitted,



Dominick G. Kass, CFPS

Cc: Russell P. Fleming, PE, NFSA Exec. V.P.
Buddy Dewar, NFSA Dir. of Reg. Ops.

M. Pilette, P.E.

COMMENTS

RECOMMENDS
SPRINKLERING OF
ALL NEW CONSTRUCTION
1 & 2 FAMILY BUILDINGS

- C53- SECTION 5313.4 et seq

Mechanical Designs Ltd.



Fire Protection Engineers and Certified Engineering Technicians

19 Erie Drive • P.O. Box 2188
Natick, Massachusetts 01760
Tel: (508) 653-5452
Fax: (508) 655-1318
e-mail: MDLimited@aol.com

May 23, 2006

Commonwealth of Massachusetts
Department of Public Safety
Board of Building Regulations and Standards
1 Ashburton Place, Room 1301
Boston, MA 02108-1618

Subject: Public Hearing May 23, 2006 - Proposed 7th Edition Building Code (One and Two Family Dwellings), Section 5313.4, Sprinklers

Attention: Members of the Board of Building Regulations and Standards

In accordance with M.G.L. Chapter 143, Section 97 "*Amendments to State Building Code; Hearings; and Petitions;*" and M.G.L. Chapter 143, Section 95 "*General Objectives of the Board*", I offer to the Board for reconsideration to their proposed requirements the enclosed proposed revision.

Sincerely,

Maurice Pilette, P.E.
Fire Protection Consulting Engineer

MP:ml

encl: Proposed Revision Request

PROPOSED REVISIONS

Change Section 5313.4 Sprinklers as proposed to read as follow:

5313.4 Automatic Sprinkler Systems

5313.4.1 Where Required: An automatic sprinkler system shall be installed within all One and Two Family Dwellings in accordance with the minimum design and installation requirement as specified in NFPA-13D, 2007 Edition *"Installation of Sprinkler Systems for One and Two Family Dwellings and Manufactured Homes"*.

5313.4.2 Water Supply: Every automatic sprinkler system shall have at least one automatic water supply and shall be installed in accordance with any of the recognized methods specified by NFPA-13D. The automatic water supply shall be in compliance with the design and installation requirements of 310CMR, *"Department of Environmental Protection"* and or 248CMR, *"Uniform State Plumbing Code"* as applicable.

5313.4.3 Applicability: An automatic sprinkler system shall be installed within all One and Two Family Dwellings in accordance with Section 5313.4.1 when a building permit is obtained on and after January 1, 2008.

Exception: When automatic sprinklers are installed within an attached garage, heat detection as specified in Section 5313.2 shall not be required.

5313.4.4 Alarms: Every automatic sprinkler system shall be provided with a listed exterior audible water flow alarm device or interconnected with the house hold fire warning system as specified in Section 5313.1

Exception: Two family dwelling common area smoke and heat detection requirements as required by Section 5313.1.10 shall not be required when a listed automatic sprinkler system water flow alarm device is located within each dwelling unit.

5313.4.5 Plans and Specifications: When required by the building official and or the head of the fire department plans and specifications shall be submitted for verification of compliance with NFPA-13D. Preparation of plans and specifications and installation of automatic sprinkler systems shall be by properly licensed sprinkler contractors and sprinkler fitters as regulated by M.G.L. Chapter 146, Section 81 to 89.

5313.4.6 Maintenance: Automatic sprinkler systems shall be properly maintained for operational readiness at all times and shall be the responsibility of the property owner. Automatic sprinkler systems shall not be shut-off, disconnected or removed without obtaining written permission by the head of the fire department as regulated by M.G.L. Chapter 148, Section 27A.

May 23, 2006

A F S A, INC.

COMMENTS

SUPPORTS M. PILETTE

PROPOSAL FOR SPRINKLERING
OF ALL 1 & 2 (NEW) FAMILY
BUILDINGS

• C53 - SECTION 5313.4

Dear Mr. Anderson

As National Vice Chair of "American Fire Sprinkler Association" I urge you to consider Mr. Maurice Pilette's proposed revision to Section 5313.4 Automatic Fire Sprinklers. Every year too many lives are lost to the devastation of a fire in a families home.

With the technology and equipment we now have this is unacceptable. The time has come to do something about it. Please consider Mr. Pilette's revision. Thank You

Lawrence Thibodeau

* SECTION 5313.4

- MR. PREVITE

COMMENTS

- MR. BERNSTEIN
COMMENTS

- MR. ROTHMAN / SUPERRA
FIRE PROTECTION, INC.
COMMENTS

ALL SUPPORT M. PRIETTE
PROPOSAL FOR SPRINKLERING
ALL NEW 1 & 2 FAMILY BLDGS.

RECEIVED

2006 JUN 19 PM 3:28

Department of
Public Safety

6-12-06

Mr. Robert Anderson
Department of Public Safety
Board of Building Regulations and Standards
1 Ashburton Place, Room 1301
Boston, MA. 02108-1618

Subject: Reconsideration To Proposed Fire Sprinkler Requirements

Dear Mr. Anderson,

I am writing to question the proposed change to the MSBC regarding **Section 5313.4 "Sprinklers"**. When one considers the residential fire death toll in the US and single family homes, it seems rather illogical that homes greater than 14,400 sq. ft (even with total aggregate included, i.e. basements) would be the only homes to be protected. I would have to question how many residents of the State would remain unprotected living in homes smaller than the proposed threshold. I struggle to understand the reasoning behind the square footage requirement and can't imagine its origin.

In this day and age, why when we have the proven technology to drastically reduce the number of citizens that perish in their homes, would we choose to overlook so many? Please apply common sense to the MSBC and adopt Mr. Pilette's proposed revisions to **5313.4 Automatic Sprinkler Systems** and make a statement for others to follow. Residential Fire Sprinklers.... It's time has come.

Sincerely,



Peter Previte

RECEIVED

JUN 19 PM 3:28

Department of
Public Safety

6-12-06

Mr. Robert Anderson
Department of Public Safety
Board of Building Regulations and Standards
1 Ashburton Place, Room 1301
Boston, MA. 02108-1618

Subject: Reconsideration To Proposed Fire Sprinkler Requirements

Dear Mr. Anderson,

I am writing to question the proposed change to the MSBC regarding Section 5313.4 "Sprinklers". When one considers the residential fire death toll in the US and single family homes, it seems rather illogical that homes greater than 14,400 sq. ft (even with total aggregate included, i.e. basements) would be the only homes to be protected. I would have to question how many residents of the State would remain unprotected living in homes smaller than the proposed threshold. I struggle to understand the reasoning behind the square footage requirement and can't imagine its origin.

In this day and age, why when we have the proven technology to drastically reduce the number of citizens that perish in their homes, would we choose to overlook so many? Please apply common sense to the MSBC and adopt Mr. Pilette's proposed revisions to **5313.4 Automatic Sprinkler Systems** and make a statement for others to follow. Residential Fire Sprinklers.... It's time has come.

Sincerely,



Scott Bernstein



RECEIVED

2006 JUN 19 PM 3:28

Department of
Public Safety

June 13, 2006

Mr. Robert Anderson
Department of Public Safety
Board of Building Regulations and Standards
1 Ashburton Place, Room 1301
Boston, MA 02108-1618

Subject: Reconsideration to Proposed Fire Sprinkler Requirements

Dear Mr. Anderson,

I am writing to question the proposed change to the MSBC regarding Section 5313.4 "Sprinklers". When one considers the residential fire death toll in the United States and in single family homes, it seems rather illogical that homes greater than 14,400 square feet (even with total aggregate included, i.e. basements) would be the only homes to be protected. I would have to question how many residents of the State would remain unprotected, living in homes smaller than the proposed threshold. I struggle to understand the reasoning behind the square footage requirement and cannot imagine its origin.

In this day and age, why when we have the proven technology to drastically reduce the number of citizens that perish in their homes, would we choose to overlook so many? Please apply common sense to the MSBC and adopt Mr. Pilettes' proposed revisions to **5313.4 Automatic Sprinkler Systems** and make a statement for others to follow. Residential Fire Sprinklers.....Its' time has come.

Sincerely,

A handwritten signature in black ink, appearing to read "Kevin Rothermel", with a long, sweeping horizontal line extending to the right.

Kevin Rothermel
Vice President
Superior Fire Protection

DPTy CHIEF
J. M. FLEMING

COMMENTS

PROMOTES PHOTO ELECTRIC
SMOKE DETECTORS &
PROPOSES SUBSTITUTING
PHOTO ELECTRIC FOR ALL
IONIZATION SMOKE
DETECTORS

- C53 - SECTION 5313
Generally

NOTE:

J. M. FLEMING FILING
IS EXTENSIVE SO ONLY
POWER POINT PRESENTATION
POSTED - ALL OTHER INFO
AVAILABLE FOR REVIEW

Joy F.

WHY ION DETECTORS ARE NOT ADEQUATE AS "STAND-ALONE" DETECTORS

JOSEPH M. FLEMING
DEPUTY CHIEF
BOSTON FIRE DEPT.

1997 PAPER HYPOTHESIZED THAT:

- Ionization detectors are inadequate at detecting smoldering fires. The results from Indiana Dunes were out-of-date due to the furniture that was used as well as changes in detection technology.
- A proper understanding of the published historical studies support this hypothesis.
- The paper advocated the need for new testing. The paper predicted that testing using today's materials and today's detection technology would find ion detectors inadequate for smoldering scenarios.
- The UL testing process did not adequately test for modern materials and allowed detectors to pass that might not work in real fires.

REASONS USED TO PROVE SMOKE DETECTORS* WORK

- Tests, such as "Indiana Dunes" show they work
- They pass the UL217 Approval Tests.
- Statistics Support Claim
 - Smoke detectors reduce fire risk by 40-50%
 - Fatalities have decreased by ½ since smoke detector started to be installed.
- They operate when toast is burned so obviously, they must operate in real fires.

*When this presentation refers to "historical record" of detectors. It basically is referring to "historical record" of ionization detectors. (CPSC estimate is that approx 90% of all detectors ionization.)

THE "TRUTH" REGARDING

'PROOF' THAT SMOKE DETECTORS WORK

- Part One (Studies) - Studies over the past 25 years, including the most recent NIST studies, have shown that in some important scenarios that ionization detectors will often not work and that there is a qualitative difference between ions and photos.
- Part Two (Statistics) - There are a lot of reason for the decrease in fire deaths. In fact, statistics indicate that there is probably something wrong with the effectiveness of detectors, i.e. ionization detectors.
- Part Three (UL Approval) - All smoke detectors are required to pass the UL detector tests, but the test are not robust and comprehensive. They fail to adequately test for the kind of smoke that occurs in many fires.

GENERALLY ACCEPTED OPINION REGARDING DETECTOR STUDIES

"When either ionization or photoelectric smoke detectors are located outside bedrooms and on each level of a house, they provide adequate warning to allow occupants to evacuate through their normal egress routes in most residential fire scenarios". (NIST Review of Detector Studies, Fire Journal 09/93.)

SCOPE OF NIST REVIEW

"An international literature search for publications dealing with the subject of fire detection was recently completed. This review identified 975 citations, 100 of them in foreign languages that were published in the last 15 years (76-91). As of June 1991, the cut-off date for inclusion in the bibliography, no studies, other than those cited here - and one in which only smoke detectors were tested - were published in open international literature that dealt with this topic. (i.e. heat and smoke detectors in residential settings.)" (NIST Review of Detector Studies, Fire Journal 1993.)

BREAKDOWN OF SMOKE DETECTOR STUDIES

- Studies conducted prior to the mid-70's.
 - Very old technology and older furniture. Not relevant.)
- Studies conducted during the mid-late 70's.
 - One cannot draw definitive conclusions from these studies unless the detector technology and furniture were similar to today's.
- Studies conducted late 70's, early 80'.
 - UL Smoldering smoke test caused increase sensitivity in detectors.
- Studies conducted after mid 80's
 - In 1984 and again in 1987 UL made changes to address nuisance alarms that had the affect of desensitizing detectors, particularly ionization detectors.

HISTORICAL DETECTOR STUDIES (ITALICIZED STUDIES WERE NOT IN NIST SURVEY)

TESTING AGENCY	YEAR	COMMENTS
National Research Council of Canada	1962	This was a study (no testing) that just used judgement to est effectiveness of detectors.
Los Angeles Fire Dept.	1960	This used heat detectors and older photoelectric technology
Bloomington MN Fire Dept.	1969	Remote smoke detectors better than nearby heat detectors. Older technology..
According to the NIST Study, published in Fire Journal, The smoke detectors used in the next test were "significantly improved over those used in prior test and were essentially equal to that of current devices." (I do not consider this to be accurate.)		
Japan Housing Corp	1974	Smoke detectors better than heat detectors.
Factory Mutual Apartment Study	1974	Ion good for flaming bad for smoldering Photo good for smoldering bad for flaming
Indiana Dunes	1976	Smoke Detectors better than heat detectors and one detector per level desirable
Massachusetts Analysis of Dunes	1976	A smoke detector per level will provide 3 minutes of escape time 80% of the time.

HISTORICAL DETECTOR STUDIES (ITALICIZED STUDIES WERE NOT IN NIST SURVEY)

TESTING AGENCY	YEAR	COMMENTS
National Research Council of Canada	1962	This was a study (no testing) that just used judgement to est effectiveness of detectors.
Los Angeles Fire Dept.	1960	This used heat detectors and older photoelectric technology
Bloomington MN Fire Dept.	1969	Remote smoke detectors better than nearby heat detectors. Older technology..
According to the NIST Study, published in Fire Journal, The smoke detectors used in the next test were "significantly improved over those used in prior test and were essentially equal to that of current devices." (I do not consider this to be accurate.)		
Japan Housing Corp	1974	Smoke detectors better than heat detectors.
Factory Mutual Apartment Study	1974	Ion good for flaming bad for smoldering Photo good for smoldering bad for flaming
Indiana Dunes	1976	Smoke Detectors better than heat detectors and one detector per level desirable
Massachusetts Analysis of Dunes	1976	A smoke detector per level will provide 3 minutes of escape time 89% of the time.

HISTORICAL DETECTOR STUDIES (ITALICIZED STUDIES WERE NOT IN NIST SURVEY)

TESTING AGENCY	YEAR	COMMENTS
Norwegian Fire Research Lab Study	1993	There are reasons to indicate Ions are inadequate for smoldering fires. Ion only 15-20 secs better than photo in flaming fires. Advantage only beneficial under extraordinary circumstances.
Smoke Alarms In Typical Dwelling Fire Research (GB)	1997 (Pt 1)	Ion cannot be guaranteed to detect smoldering fire. Ion better at flaming and difference could be critical. (smolder > 30 m)
Practical Comparison of Alarms Fire Research (GB)	1997 (Pt 2)	Both Ion and Photo Adequate (In Pt 2 the "smoldering fire" appeared to smolder for a shorter period than in Pt 1
Simplex Study- 12 th International Detection Conference	2001	Ion detector only slightly better for flaming. Photo provides clear advantage over ion if most likely danger is from smoldering fires
KEMANO FIRE STUDIES NRC-Canada	2002	Both Ion and Photo appeared to be adequate. (Fire appeared to smolder for less than 15 mins.

NIST DISREGARDED STUDIES WHICH IDENTIFIED ION AS INADEQUATE

- There were three studies, in the "public literature prior to 1991", not discussed in the NIST/Fire Journal article. All three identified ion detectors as inadequate for smoldering fires.
- A 1986 Australian Study is not discussed because "it did not include heat detectors". I see no reason why this would invalidate the results. Researchers favored photoelectric detectors.
- Even though the paper was published in 09/93 the cut-off date for studies was 06/91. - ONE MONTH BEFORE NORWEGIAN STUDY WAS PUBLISHED! Norwegians favored photoelectric detectors

"TRUTH" ABOUT HISTORICAL DETECTOR STUDIES

- For the past 30 years, every study that used modern furniture and smoldered material for at least 30 minutes concluded that ionization technology was inadequate for smoldering.
- Although all studies recognized that ion were slightly superior for flaming fires, no study felt that photoelectric were not adequate for flaming fires.

Note: My analysis was done by reading every periodical in the NFPA library over a 3 year period.

QUOTES FROM STUDIES

- "This test will show that most photoelectric detectors, operated by battery will detect smoke at about 1.5-3% smoke, which is good. The test will show that the photoelectric detectors operated by household current will activate between 2 and 4 %, which is still good. But, the test also will show that many ionization detectors will not activate until the smoke obscuration reaches 10-20 and sometimes 25%. ... Therefore, because of the present state of the art in detecting smoke, the Subcommittee on Smoke Detectors can take no other course but to recommend the installation of photoelectric detectors." - IAFC REPORT, CAL CHIEFS, 1979.
- Ionization chamber type detectors, in the room of origin and the corridor, did not, in the smoldering fire tests, provide adequate warning that the escape route was impassable or that conditions in the room were potentially hazardous to life. - GREAT BRITAIN, 1978

QUOTES FROM STUDIES

- The photo smoke detector operated 1 hour and 8 minutes, 29 seconds before the first ion detector in the smoldering-started fire. In this test, all photo detectors in the room, as well as the photo detectors in the corridor beyond the closed door, responded before the first ion detector. - FT LAUDERDALE 1984.
- Ionization detectors sited in the hallway generally provide inadequate escape times unless smoke movement into the hallway is slowed down by narrow door openings, causing a slower loss of visibility, or unless they are sited close to the smoke source. - AUSTRALIA, 1986
- The ionization detectors detected smoke from a smoldering fire much later than optical (photoelectric) detectors. When the particular conditions during the fire development are taken into consideration there are reasons to indicate that this detection principle would not provide adequate safety during this type of fire. - NORWAY, 1991

QUESTION:

ARE NIST CONCLUSIONS FROM RECENT TESTING, REGARDING RELATIVE BENEFITS OF ION VS. PHOTO, CONSISTENT WITH THESE OTHER STUDIES?

NOTE: Since the Smoldering Fires in the NIST Test smoldered for more than 30 minutes and used modern furniture, it should be compared to other tests that had these characteristics.

ANSWER?

"A report from the Commerce Department's National Institute of Standards and Technology (NIST) today stated that both types of commercially available home smoke alarms (also called smoke "detectors") consistently provide people enough time to escape most residential fires." - NIST Press Release

THIS WOULD APPEAR TO CONTRADICT PREVIOUS SIMILAR TESTS (I.E. TEST THAT SMOLDERED MODERN FURN. >30 MINS) THAT FOUND ION INADEQUATE FOR SMOLDERING,

- DOES IT?

**NIST SMOKE ALARM STUDY, 2004
ASET - MANUFACTURED HOME
(PAGE 242, TABLE 27)**

	PHOTO	ION
FLAMING		
Living Room	85	142
Bedroom	58	93
Bedroom(Door Closed)	451	898
SMOLDERING		
Living Room	172	-43
Bedroom	1091	82
COOKING		
Kitchen	575	821

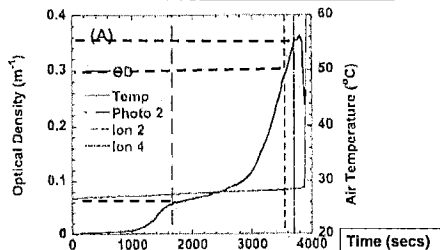
Smoldering fires in living room were the #1 fatal scenario.

**NIST SMOKE ALARM STUDY, 2004
ASET - MANUFACTURED HOME
(PAGE 243, TABLE 28)**

	PHOTO	ION
FLAMING		
Living Room	108	152
Bedroom	---	374
Bedroom(Door Closed)	3416	3438
SMOLDERING		
Living Room	3298	16
Living Room (AC on)	2772	-54
Bedroom	135	135
COOKING		
Kitchen	952	278

Smoldering fires in living room were the #1 fatal scenario.

NIST - SMOLDERING LIVING ROOM FIRE - TEST 34



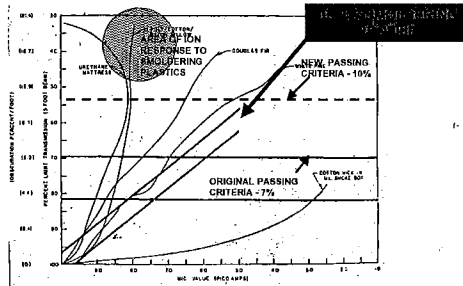
Photo(3-4% O/ft), Ion 2 - (17-19% O/ft), Ion 3 - (20-22% O/ft)

SHOULD WE HAVE BEEN SURPRISED THAT ION DETECTORS DID NOT RESPOND UNTIL 17-22% OBSC/FT?

IF SOMEONE WAS FAMILIAR WITH MY PAPER FROM 1997 THEN THEY SHOULD NOT HAVE BEEN SURPRISED. HERE IS A QUOTE:

"But, the test also will show that many ionization detectors will not activate until the smoke obscuration reaches 10, 15, 16, 17, 20, and sometimes 25%."

SMOKE PROFILE (MIC VS. OBS.) OF SMOLDERING MATERIAL - SCHUCARD (COMPARED TO UL 217)



SMOKE BOX SENSITIVITY VS. RESPONSE TO FUELS (Schucard)

IONIZATION DETECTOR				
SMOKE BOX	WHITE PINE	DOUGLAS FIRE	URETHANE MATTRESS	POLYESTER PILLOW
0.85	6.2	7.7	20.0	NO RESPONSE
1.1*	7.4*	NO RECORD	21.6	26.8
1.3*	8.9*	11.2	20.0	21.8
1.78	10.4	15.6	NO RESPONSE	26.8
3.7	9.6	18.0	NO RESPONSE	28.4

* Ionization detectors at these sensitivities would have flunked original UL test at 7% but passed at 10%.

ARE ION BETTER FOR FLAMING FIRES?

- The advantage of ionization smoke detectors during flaming fires is only about a 15-20 second earlier warning. This margin will only be decisive for the loss of human life in extraordinary circumstances. In general the difference between the alarm times for the optical and the ionization detectors are reduced when the detection is made from an adjacent room. This can be related to the fact that particles in the smoke tend to coagulate (smoke aging). (*Norwegian Study*)
- Smoke detectors should be able to save at least 60% and possibly 75% of sleeping victims, but only 13% of victims who were awake. *McGuire and Ruscoe, 12/62.* (This is because most fatal flaming fires occur while people awake. All fatal smoldering fires occur while victim sleeping.)

NIST'S REASONS WHY CURRENT RESULTS DIFFER FROM 1975

- Main difference in amount of escape time attributed to (Page 248):
 - Different and more conservative tenability criteria
 - Fire growth rates significantly faster
- In reality, since the obscuration criteria was always the limiting criteria, i.e. the first to be reached, the tenability criteria are essentially the same.
- In addition, although the flaming fire starts have an 80% decrease in time to untenability, The smoldering fire only have a 20% decrease and still do not reach untenability for over 50 mins on average

**TENABILITY CRITERIA
INDIANA DUNES (75) VS. CURRENT
(TABLE 31, PAGE 248)**

	1975 TESTS	CURRENT
TEMPERATURE	$\geq 66^{\circ}\text{C}$	$\geq 88^{\circ}\text{C}$
CO CONCENTRATION	$\geq .04\%$	$\geq .02-.03\%$
SMOKE OBSC. (OD/M)	$\geq 0.23/\text{m}$ (16% obs/ft)	$\geq 0.25/\text{m}$ (17% obs/ft)

**TENABILITY TIMES
INDIANA DUNES (75) VS. CURRENT
(TABLE 30, PAGE 248)**

	1975 TESTS	CURRENT
FLAMING	1043 +/- 365	169 +/- 37 (84% LESS)
SMOLDERING	4146 +/- 1961	3303 +/- 1512 (20% LESS)

**"REAL" DIFFERENCE IN
RESULTS FROM 1975 RESULTS**

	1975		CURRENT	
	FLAMING	SMOLDER	FLAMING	SMOLDER
ION	ADEQUATE	ADEQUATE	ADEQUATE	NOT ADEQUATE
PHOTO	ADEQUATE	ADEQUATE	ADEQUATE	ADEQUATE

The important result that differs from the 1975 tests is that the ionization detector is not responding adequately to smoldering fires. The best explanation is: ionization detectors may have been de-sensitized over time (definitely since the early 80's) and are relatively poor at detecting the kind of smoke given off by today's furnishings. This possible explanation was never investigated or even discussed by NIST.

IMPORTANCE OF SMOLDERING FIRES

- In a 1979 study of fatal fires, the NFPA found that, "two-thirds of the deaths in one and two fatality fires resulted from fires between the hours of 8pm and 8 am. Moreover, most of these deaths occurred in fire that gained large head starts - over 40 minutes for 38% of such deaths - before discovery.
- A British Study of fatal fires broke the fires into two types. Fires estimated to have been discovered within 5 minutes of ignition (most likely to have been rapidly growing flaming fires) and for fires where the time to discovery is estimated to have been 30 minutes or more (most likely to have involved a period of prolonged smoldering before severe flaming). There were 20 times more victims per fire for the smoldering scenarios.

IMPORTANCE OF SMOLDERING FIRES

- Delayed discovery, typically associated with fires that occur at night when everyone is asleep, also tends to be a characteristic of the smoldering fire caused by discarded smoking material. These smoldering fires are the leading causes of US fire fatalities and detectors are ideally designed to deal with them. "A Decade of Detectors", Fire Journal 09/85, John Hall.
- Smoke detectors should be able to save at least 60% and possibly 75% of sleeping victims, but only 13% of victims who were awake. "Value of Fire detector in Home", McGuire and Ruscoe, Research Council of Canada, 12/62.

QUESTION

- If:
 - Most smoke detectors are ionization
 - Ionization smoke detectors are not effective at detecting smoldering smoke.
 - Detectors provide greatest benefit in smoldering started scenarios which occur while people are sleeping.
- Then:
 - Why do the statistics show smoke detectors being effective over the past 20 years?

THE ANSWER IS THAT - THEY DON'T!

BENEFIT OF DETECTORS IN U.S. FOR 1994 USFA (NFPA METHODOLOGY)

	PRESENT & OPERATED	PRESENT & DID NOT OPERATE	NO ALARM
# FIRES	47,590	30,538	59,844
# DEATHS	223	232	704
RISK (# DEATHS/ 100 FIRES)	.475 (223/475)	0.76 (232/305)	1.178 (704/598)
	FOR ALL "PRESENT" .583 (455/780)		1.178 (704/598)

RISK IS REDUCED "EVEN WHEN SMOKE DETECTOR IS PRESENT BUT DOES NOT WORK". (1.178 vs. 0.76) THEREFORE A LOT OF THE REDUCED RISK MUST BE DUE TO SOCIOLOGICAL FACTORS NOT THE DETECTORS.

BENEFIT OF DETECTORS IN U.S. FOR 1998, USFA (NFPA METHODOLOGY)

	PRESENT & OPERATED	PRESENT & DID NOT OPERATE	NO ALARM
# FIRES	25,715	17,143	36,140
# DEATHS	154	108	355
RISK (# DEATHS/ 100 FIRES)	.599 (154/257)	0.62 (108/171)	.983 (355/361)
	FOR ALL "PRESENT" .607 (260/428)		.983 (355/361)

RISK IS REDUCED "EVEN WHEN SMOKE DETECTOR IS PRESENT BUT DOES NOT WORK". (0.983 vs. 0.62) THEREFORE A LOT OF THE REDUCED RISK MUST BE DUE TO SOCIOLOGICAL FACTORS NOT THE DETECTORS.

DO DETECTORS PROVIDE 40-50% LESS RISK? COMPARISONS OF ESTIMATES (NFPA METHOD)

		SMOKE DETECTOR PRESENT	SMOKE DETECTOR ABSENT	REDUCTION IN RISK
RISK (NUMBER DEATHS/ 100 FIRES) NFPA ASSUMPT'S BUILT IN	NFPA AVE (99-01) NFIRS V4.0 & V 5.0 (ADJ)	0.65	1.13	43%
	NFPA (2001) NFIRS V4.0 & V 5.0 (ADJ)	0.86	1.13	24%
RISK (NUMBER DEATHS/ 100 FIRES) MORE SPECIFIC DATA	USFA - 2001 (NFIRS V 5.0)	0.772	1.044	26%
	NFPA AVE (99-01) NFIRS V 5.0	1.12	1.21	7.0%
	U.K. (94-97)	0.785	0.767	-2.3%
	U.K.(FROM NFPA) (99-01)	0.63	0.68	-7.0%

HOW MUCH OF REDUCTION IN FIRE DEATHS IS DUE TO DETECTORS?

- In the late 70's approximately 6,200 people dies per year in homes.
- According to the NFPA:
 - If no one had detectors residential fatalities = 4,230.
 - If everyone had detectors resid fatalities = 2,430.
 - Actual ave for 1999-2001 = 3,140 fatalities per year.
- According to the NFPA, fatalities would have decreased by approx 2,000 people per year without any smoke detectors! (2/3 of total.)

Data from NFPA Smoke Detector Study 11/04.

REDUCTION ANALYSIS CONT'D

- Numbers on previous slide obtained from:
 - Total number of fires in 2001 380,000 (3,800, "100's")
 - No Detector "risk" = 1.1 (Therefore $1.1 * 3,300 = 4,230$)
 - Detector Present Risk = .65 (Therefore $.65 * 3,800 = 2,430$)
 - Risk, when present and operated, = 0.54 and risk when present and did not operate = 0.93. Having a smoke detector that does not operate is safer than not having one? ("socioeconomic/construction) factor.
 - If you took away smoke detectors from entire "risk averse" population that currently has them it is unlikely risk would stay at level of "risk accepting" population. If one assume as risk of .0 instead of 1.1 then -

TOTAL REDUCTION WITH NO SMOKE DETECTORS WOULD EQUAL 2,400 ($6,200 - 1.0 * 3,800$),

5/6THS OF TOTAL REDUCTION.

U.K REDUCTION ANALYSIS

- In 1988 10% of U.K. had detectors, in 1996 70%.
- In an 8 year period from 1988 to 1996 the reduction in the risk of death in residential fires dropped from close to 17 pmp (deaths per million people) to around 12pmp, a 29% decrease in risk. In 1996 we could suggest that no more than 13% was due to smoke alarms and 15% was due to 1988 furniture regulation.
- The estimate of smoke detector effectiveness is an upper estimate that is based on an assumption that the alarm leads to an action that removes people from the fire scene.
- So at most, these researchers, University of Surrey - Polymer research Center (2005), credit detectors with 44% of reduction - probably less.

TRENDS IN FIRE DEATHS VS. INCREASE IN DETECTOR USAGE

	61-71 (20 YEARS)	65-75 (10 YEARS)	77-87 (10 YEARS)	92-02 (10 YEARS)
INCREASE IN HOMES WITH DETECTORS OVER	0%-<4%	<4%-10%	22%-82%	90%-96%
% DECREASE IN FIRE DEATHS PER MILLION PEOPLE	-26.0% NFPA ESTIMATES HB - 14 TH ED..	-27% (Residential) National Safety Council	-29% (All) NFPA	-25% (All) NFPA

FIRE DEATHS WERE DECREASING BEFORE
WIDESPREAD USE OF DETECTORS AND CONTINUED TO
DECLINE AFTER "MARKET SATURATION".

DO CHIEF'S MAKE MISTAKEN ASSUMPTIONS ABOUT DETECTORS?

- Boston Globe (BG), 10/05/04 - Blaze, reported at 1:33 a.m., kills 5 in duplex, Dennis MA. A smoke detector without a battery was found in unoccupied side of duplex. No smoke detector found in charred side.
- Boston Herald (BH), 10/05/04 - Fire officials said there were no working smoke detectors in the fire apt. and fire may have raged for an hour. Officials focusing on smoking. At some point the parents awoke and tried to rescue the children.
- Cape Cod Times (CCT), 10/06/04 - State Fire Marshal said that the lack of working smoke detectors "contributed to this terrible tragedy". Fire Marshal used the fire as a "teaching moment".

MISTAKEN ASSUMPTIONS CONT.

- **HOWEVER** In April, the Realty Company produced an affidavit/rental agreement that indicated detectors were there in April. The Realty Co. blamed tenants for disabling detector. Newspaper does an article on nuisance alarms and reminds people to check their detectors. (No mention of photo lower susceptibility to nuisance alarms.) - CCT 10/06/04
- **HOWEVER** A friend said she heard detectors go off at a Birthday party in August, due to cooking. She could not imagine them disabling detector because they were so protective of children. - CCT 10/06/04. Victims' father said, "a few days before fire they went off because of cooking." - CCT 10/07/04

ISN'T IT LIKELY THAT THIS WAS A SMOLDERING FIRE
WITH ION DETECTORS THAT WENT OFF TOO LATE?

MISTAKEN ASSUMPTIONS CONT.

- Initially, officials reported that the family had disabled their smoke detector and, consequently, was not alerted until it was too late that an electrical blaze had resulted from a frayed cord behind a couch. However, an investigator for Allstate, which provided homeowner's coverage, discovered that the smoke detector closest to the fire was properly powered but failed to go off. (Rotterdam, NY 05/06)
- Investigators believe "careless disposal of smoking material" caused the blaze. Fire officials also believe the smoke detectors at Dunn's home were not working, Mieth said. "In talking to investigators, they really believe that if there were working smoke detectors in the home, most likely the gentleman would have survived the fire," she said on Monday.

COMMENT

INVESTIGATORS, SIMILARLY TO THE
PUBLIC, ASSUME A DETECTOR ALWAYS
RESPONDS "EARLY" BECAUSE THEY SEE IT
RESPOND "EARLY" TO NUISANCE
SOURCES LIKE TOASTING. SINCE THEY
ARE TOLD THAT DETECTORS (ION
DETECTORS) ALWAYS OPERATE EARLY
THEY DO NOT IDENTIFY IT AS A PROBLEM.

BUT - NOT ALL SMOKE IS THE SAME.

TOAST SMOKE VS. REAL SMOKE

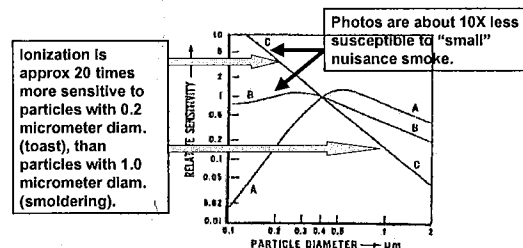


Figure 4: Relative Sensitivities of Three Technologies
as a Function of Particle Diameter¹¹

A = beam photo B = spot photo C = ionization

WHAT ABOUT "NUISANCE" ALARMS?

- We favor photoelectric detectors to reduce rates of nuisance alarms from cooking and to provide optimal protection from cigarette related fires. Electrical detectors with battery back-up are the detectors of choice, except in communities such as remote villages in Alaska, where alternating current is non-existent or unreliable. If ionization detectors are installed, they should be located at least 20 feet, and preferably 25 feet, from stoves and at least 10 feet from bathroom doors if possible.". *"Smoke Detector Nuisance Alarms - A Field Study in a Native American Community", Fire Journal (Sept/Oct 1996).*

WHAT ABOUT "NUISANCE" ALARMS?

- We conclude that the incidence of nuisance alarms is much higher in small dwellings using ion smoke alarms. The higher rates of alarm disconnection in the homes with ion alarms are likely related to the high rate of nuisance alarms in these homes. The use of photo alarms in small dwellings may lead to a lower rate of disconnection and improved survival in the event of fire. *"Ion and Photo Alarms in Rural Alaskan Homes", Western Journal of Medicine August 2000.*

SOME PEOPLE ARE "UNSAVABLE" - AREN'T THEY?

- "Detectors do indeed make a difference. Yet in 40% of the reported residential fire deaths in 2001, a detector did operate; in 1988, it was 9 percent. In some cases, the detector may have gone off too late to help the victim, or the victim may have been too incapacitated to react.
- Several recent studies have tried to provide reasons why people die when the detector operates: audibility, lack of mobility, alcohol/drugs etc. These reasons only explain why some people die. No researcher, except for me, has provided an explanation for why the number quadrupled in 13 years.

WHAT CHANGED FROM 1988 TO 2001?

- The % of people in a "high risk" category remained essentially the same. The materials found in homes from 88 to 01 remained essentially the same.

SMOKE DETECTORS CHANGED!

- In 1985 UL forced the ion manufacturers to make less sensitive ion detectors to reduce nuisance alarms. In 1986 UL changes smoldering test to make it "easier to pass". (Probably to accommodate less sensitive ion detectors.) These "ineffective" ion detectors would have been gradually introduced in to American Homes starting in the late 80's, resulting in a gradual increase in fatalities when detector operates, but too late.

FATALITIES VS. DETECTOR INFO (UNKNOWN APPORTIONE IN PARENTHESIS)

	DETECTOR PRESENT OPERATED	DETECTOR PRESENT DID NOT OPERATE	DETECTOR NOT PRESENT	UNKNOWN
USFA 2001 (NFIRS v5)	26.4 (40)	13.7 (20)	26.4 (40)	33.8
MASS 2002 (NFIRS v5)	39.0 (45)	15.0 (17)	33.0 (38)	13.0

- In both studies approximately 40% of fatalities occur when detector operates. This equals approximately 1400 people per year.
- In both studies approximately 20% occur when detector is present but inoperable. This equals approximately 700 people per year.
- My analysis of Massachusetts fatalities shows that when detector operate about 1/2 of victims were able bodied and fire was a slow growth fire. Victims should have been able to get out.

POTENTIAL BENEFITS OF SWITCHING TO PHOTOELECTRIC DETECTORS

- Photoelectric detectors might reduce by 1/2 the # of people dying in smoldering fires when the detector works. (This would be a 20% reduction.)
- Photoelectric detectors might reduce the number of disabled detectors due to nuisance alarms. (Assume problem reduced by 1/4 - 5% reduction)
- It seems reasonable to assume that switching from ionization to photoelectric technology could save 800 lives (.25 * 3,200) per year!

This number could be higher, if # of fatalities that occur when no smoke detector present is over-estimated. (Many Chief's assume that if occupants died then the smoke detector wasn't there - good PR opportunity.

WHAT ABOUT COMBINATION DETECTORS?

- Some argue that ion better for flaming and photo better for smoldering and combination, ion/photo provide the best protection. (This statement implies that there was no "problem" with ion technology.)
- For example: ionization smoke alarms respond faster to flaming fires, while photoelectric smoke alarms respond quicker to smoldering fires. (NIST Press Release, 02/04.

WHY DOES "FASTER" MEAN SECONDS IN FLAMING FIRES AND "QUICKER" MEANS 30 MINUTES OR MORE IN SMOLDERING FIRES. IN ADDITION EVEN THOUGH THE PHOTO IS SLIGHTLY SLOWER IN FLAMING FIRES THEY STILL PROVIDE ENOUGH TIME FOR ALERT OCCUPANTS TO ESCAPE

WHAT ABOUT COMBINATION DETECTORS?

- I would re-state it this way. "Ionization detectors provide a marginal time benefit (which may not produce a life saving benefit) in a small % of fires. Photo-electric detectors provide a large, life saving benefit for the large number of smoldering started fatal fire that occur while victims are sleeping.)
- In addition, the very small benefit, if any, that an ion detector provides in flaming fire starts is exceeded by the reduced benefit that is created due to the nuisance alarm problem. It is reasonable to assume that 20% of combination detectors will be disabled due to nuisance alarms.

NFPA 72 & NUISANCE ALARMS

- Following Massachusetts' lead NFPA 72 eventually adopted language that required that any ion detector near a kitchen be required to have a "Silence" feature.
- This "accommodation" to the ion industry has several flaws.
 - No one knows about this requirement. The NFPA does not mention it in any public education literature.
 - The button is often so small that it is unrecognizable.
 - How are tenants supposed to be educated on this feature?
 - How is an elderly or handicapped person supposed to reach it?
 - Repeated nuisance alarms could still cause disablement.

RESPONSE OF NFPA 72 COMMITTEE TO 1999 PROPOSAL BY CHIEF FLEMING

"The committee feels that the data cited does not make a sufficiently compelling case for banning an entire technology. There would need to be clear evidence of a compelling hazard in order to justify a change that would deny ionization technology to consumers and to literally put companies out of business. A comprehensive testing project is being considered by the US Consumer Safety Product Commission (CPSC). If these tests indicate a compelling reason to ban ionization technology the committee will reconsider."

COMMENTS ON NFPA RESPONSE

- Since the NFPA Committee is dominated by manufacturers and consultants is it any surprise that they put the interests of the detector companies ahead of the American Consumer?
- In 1996 this Board put the interests of Massachusetts residents before the interests of the alarm industry and adopted my recommendation regarding nuisance alarms. That had been proven to be justified. I am asking this Board to once again listen to me and analyze my data and adopt language that does not allow smoke detectors with only ionization technology to be installed in residential occupancies.

CONCLUSION

- During a recent addition I upgrade my alarm system. The system that I believe provided the greatest benefit to me family consists of 8 photoelectric detectors.
- 1 in each bedroom (3)
- 1 in upstairs hall (1)
- 1 on ceiling near stairwell on 1st floor & basement) (2)
- 1 extra detector on 1st floor and basement to protect rooms more than 25 feet from detector near stairs. (2)

I RECOMMEND THE SAME FOR OTHERS.

B.A.G.B.

COMMENTS

- C 53 - SPRINKLERS
- C 61 - ENERGY CONSERVATION



**BUILDERS
ASSOCIATION
of
GREATER
BOSTON**

700 Congress Street
Quincy, MA 02169
Phone: 617-773-1300
Fax: 617-773-1660
Email: information@bagb.org
www.bagb.org
www.bagbsmc.org

JUDITH A. JENKINS
President

DANIEL GREEN
1st Vice President

STEFANOS EFSTRATOUDAKIS
Secretary/Treasurer

TIMOTHY CALLAHAN
2nd Vice President

CRAIG MEYER
3rd Vice President

PETER GORMLEY
Associate Vice President

PAUL MORIARTY
General Counsel

MARK KABLACK
Assistant General Counsel

GARY RUPING
Immediate Past President

BOARD OF DIRECTORS

BUILDERS
Andrew Copelotti
Guy Corricelli
Wayne DelPico
Peter Fenton
Arnold Johnson
John Keohane
Gary Litchfield
Tim Porter
Thomas Skahen
Robert Shepard
Ronald Turowetz
Mark Waitkus

ASSOCIATES
Catherine Applegate
Clark Bilawchuk
Eileen Caplan
Nigel Costalloe
Wendy Ganson
Jane O'Connor
Gregory Ryan
John Steiger
Mark Tarpey
Christine Zuendt

HOWARD M. CHANDLER
Executive Officer

May 31, 2006

Board of Building Regulations and Standards
One Ashburton Place
Room 1301
Boston, Massachusetts 02108-1618

Gentlemen,

On behalf of the Builders Association of Greater Boston I want to thank you for your participation as a member of the Board of Building Regulations and Standards and for your thoughtful interpretation of determining how we build.

The Builders Association of Greater Boston, representing over seven-hundred members, has been anticipating the adoption of the Seventh Edition of the One & Two Family Building Code. We have been following the on going dialog and we are aware of the testimony that is presented to the Board at Public Hearings that are so critical to the process of creating a sound and reasonable building code.

The Builders Association of Greater Boston's members are committed to providing safe housing at all levels for people wishing to live and work in the Commonwealth. We are very concerned with the increasing cost of producing housing and the fact that our increase in expense translates to an even greater burden on the consumer. We know that this is also a concern of the Board. I respectfully submit the following comments and ask that you consider them as you continue to review and make changes to the Seventh Edition of the One & Two Family Building Code.

Increasing the R value of insulation in exterior walls to the proposed R-21 does not really provide the relief to consumers that the proponents advocate. Proper installation and adherence to manufacturer's recommendations for correct (industry standard) installation of current code compliance insulation materials better serves the consumer. We believe that there are better ways to conserve energy that begin with best practices by the builder when it comes to energy efficient construction technology (not just adding insulation) and end with that the same builder working with the consumer to promote energy savings. We are also aware that

AFFILIATIONS:

Home Builders Association of
Massachusetts

National Association
of Home Builders

this requirement was rolled back for the current International Residential Code (IRC).

Residential builders involved in new construction and renovation and remodeling have an obligation to provide home owners with a safe and affordable environment in which to live. Consumers deserve nothing less and over time the introduction of safety measures like ground fault interrupters, smoke detectors, CO detectors and other early warning devices coupled with safety improvements to home appliances and mechanical systems are recognized contributors to increased safety in the home. Everyone has benefited from these safety enhancements. We believe that residential sprinklers do not fall into the same category.

Based on the current research and statistical analysis available relative to adopting fire sprinklers in one and two family dwellings at this time, in our view, would put in place a burden on the consumer that is unnecessary. The cost of installing a sprinkler system in a home may not seem like a burden initially, but as you know, the costs associated with providing adequate water supply, monitoring equipment, and maintenance (including preventive maintenance) far exceeds the cost of installation. In effect we are talking about a complete new building system to the home building community. These costs need to be identified and addressed by the residential construction community, as well as, by municipalities before any final decision. As mentioned earlier in this letter technical advances in equipment and warning devices have saved lives. We suggest that the Board continue to hear arguments both for and against in anticipation of the residential building community finding more creative solutions to fire safety than simply installing a sprinkler system.

Again we respect your commitment to providing the Commonwealth with a sound and reasonable Building Code. Thank you for your consideration.

Sincerely yours,
Builders Association of Greater Boston

A handwritten signature in black ink, reading "Judith A. Jenkins". The signature is fluid and cursive, with the first name "Judith" being the most prominent part.

Judy Jenkins, 2006 President

P. Gould

COMMENTS



The Gould Company
Manufacturers' Agents

Peter Gould

16 Eaton Square
Needham, MA 02492-2396

Tel. 781.444.0562
Fax 781.444.0656

email: peter@gouldhvac.com

- PROPOSES : (CGI-ENERGY CONSL.)
- REDUCTION TO DUCT INSULATION
FROM R-8 → R-6
 - & OTHER RECOMMENDATIONS

NOTE:

P. GOULD FILINGS ARE
EXTENSIVE & MUCH
IS NOT POSTED BUT
AVAILABLE

<http://www.energycodes.gov/pdf/DOE-IECC-duct-R-tradeoff-perf-path.pdf>

<http://epb1.lbl.gov/ducts/images/insulationreduction.gif>

<http://energysystems.tamu.edu/sb5/documents/Stakeholders%20Letter12-28-2006.pdf>

RECEIVED

2006 MAY 31 PM 2:18

Department of
Public Safety

Tom,

The Code Change Proposal from Ron Majette at the U. S. Department of Energy, (see above), argues a reduction from R-8 to R-6/R-4 and is similar to one of my proposals to the Massachusetts 7th Edition draft. I would prefer R-6 because I believe that there is a benefit to taking the insulation values to that level and it is easily attainable with both products in the market - fiberglass AND bubble-wrap insulation. (See 2nd attachment - Berkeley Labs)

The adoption of this type of Energy Efficiency Trade-Off similar to the one developed by Texas A&M – Energy System Laboratories, (see other attachment), would make the Mass Building Code one of the more advanced codes in the country. It would show that the Mass Code has not only adopted the latest published IECC regulations but that it has the foresight, like Texas, to agree with the U. S. Department of Energy findings and remove the highly suspicious, last-minute code amendments that called for unjustifiable insulation values.

According to the U. S. Dept. of Energy report the **primary** effect of the changes to wall insulation was “instantly prohibiting products that would otherwise maintain market share”, or, in layman's terms, Goliath crushing David. The DOE analysis showed a payback period of 40 to 90 years for the wall insulation increase. The DOE is currently using the Lawrence Berkeley National Labs 1996 duct efficiency test report to show that R-8 duct insulation is also a similar waste of resources. These third-party tests show that there were no prior studies proving any benefit or justification for the last-minute amendments. The only answer to the question as to why these changes were initiated, if there wasn't any proven energy savings, was the elimination of competition in the insulation market.

The conclusion is as simple as it is serious – if the national codes are manipulated to benefit one manufacturer over another without substantial evidence to justify the changes then the codes become worthless. They will lose the respect they have earned within the industry.

Tom, I am asking the EAC to examine these reports and make the one of the following changes:

- A.) Reduce the Minimum Duct Insulation on **Chart 6106.4.5.3** from Supply R-8 to R-6.
- B.) Adopt the recommended changes in the D.O.E. proposal to the ICC
- C.) Adopt the “Trade-Off Reduction” outlined by Texas A&M in the above attachment.

Thank you for your assisting me throughout this process. I readily admit my lack of experience and appreciate your consistent patience and professionalism. I will send hard copies to your office today.

Best regards,

Peter Gould
Representing: Reflectix, Inc.

Allow reduced duct insulation in simulated performance alternative



PUBLIC CODE CHANGE PROPOSAL FORM FOR PUBLIC PROPOSALS IN THE INTERNATIONAL CODES

2006/2007 CODE DEVELOPMENT CYCLE

CLOSING DATE: All Proposals Must Be Received by March 24, 2006

The 2006/2007 Code Development Hearings are scheduled for
September 20 to 30, 2006 in Orlando, FL

- 1) **Name:** Ronald Majette **Date:** March 24, 2006
Jurisdiction/Company: United States Department of Energy
Submitted on Behalf of: United States Department of Energy
Address: 1000 Independence Avenue, EE-2J, IJ-018
City: Washington **State:** DC **Zip Code:** 20585
Phone: 202-586-7935 **Ext.:** **Fax:** 202-586-4617 **E-mail address:** Ronald.majette@ee.doe.gov

- 2) ***Signature:** _____
** I hereby grant and assign to ICC all rights in copyright I may have in any authorship contributions I make to ICC in connection with this proposal. I understand that I will have no rights in any ICC publications that use such contributions in the form submitted by me or another similar form and certify that such contributions are not protected by the copyright of any other person or entity.*

Signature for electronic submittal: When submitting proposals electronically, to complete the submittal process, print a copy of the ICC Electronic Copyright Release form found at www.iccsafe.org, fill in the requested information, send to ICC. One completed form is required. This must be done for each code change cycle and can be used for code changes and public comments.

- 3) Indicate appropriate International Code(s) associated with this Public Proposal – Please use Acronym: IECC
If you have also submitted a separate coordination change to another I-Code, please indicate the code: _____
(See section below for list of names and acronyms for the International Codes).
- 4) **Be sure to format your proposal and include all information as indicated on Page 2 of this form.**
- 5) Proposals should be sent to the following offices via regular mail or email. An e-mail submittal is preferred, including an electronic version, in either Wordperfect or Word. The only formatting that is needed is **BOLDING, STRIKEOUT AND UNDERLINING**. Please do not provide additional formatting such as tabs, columns, etc., as this will be done by ICC

Please use a separate form for each proposal submitted. Note: All code changes received will receive an acknowledgment.

Please check here if separate graphic file provided. ☐

Graphic materials (Graphs, maps, drawings, charts, photographs, etc.) must be submitted as separate electronic files in .CDR, .IA, .TIF or .JPG format (300 DPI Minimum resolution; 600 DPI or more preferred) even though they may also be embedded in your Word or Wordperfect submittal.

Code	Send to:
IBC	International Code Council
ICC EC	Chicago District Office
IEBC	Attn: Diane Schoonover
IFC	4051 West Flossmoor Road
IFGC	Country Club Hills, IL 60478-5795
IPC	Fax: 708/799-0320
IPSDC	codechanges@iccsafe.org
IPMC	
IWUIC	
IRC	

IECC	International Code Council
ICC PC	Birmingham District Office
IMC	Attn: Annette Sundberg
IRC	900 Montclair Road
	Birmingham, AL 35213-1206
	Fax: 205/592-7001
	codechangesbhm@iccsafe.org

Acronym	ICC Code Name
IBC	International Building Code
ICC EC	ICC Electrical Code—Administrative Provisions
IECC	International Energy Conservation Code
IEBC	International Existing Building Code
IFC	International Fire Code
IFGC	International Fuel Gas Code
IMC	International Mechanical Code
ICC PC	ICC Performance Code
IPC	International Plumbing Code
IPSDC	International Private Sewage Disposal Code
IPMC	International Property Maintenance Code
IRC	International Residential Code
IWUIC	International Wildland-Urban Interface Code
IZC	International Zoning Code

Allow reduced duct insulation in simulated performance alternative

CODE CHANGE PROPOSAL

Please provide all of the following items in your code change proposal. Your proposal may be entered on the following form, or you may attach a separate file. However, please read the instructions provided for each part of the code change proposal. The sections identified in parentheses are the applicable sections from CP #28 Code Development. The full procedures can be downloaded from www.iccsafe.org.

Code Sections/Tables/Figures Proposed for Revision (3.3.2): IECC Section 404.2 and Table 404.5.2(2).

Name/Company/Representing (3.3.1): Ronald Majette / United States Department of Energy

Proposal:

Revise as follows:

404.2 Mandatory Requirements. Compliance with this section requires that the criteria of Section 401, 402.4, 402.5, 402.6, and 403 all sections of 403 except 403.2.1 be met. Supply and return ducts not completely inside the building thermal envelope shall be insulated to a minimum of R-4.

List all subsections of Section 403 except for 403.2.1 as "Mandatory"

Table 404.5.2(2) Default Distribution System Efficiencies for Proposed Designs ^(a)

Distribution System Configuration and Condition:	Forced Air Systems	Hydronic Systems ^(ba)
Distribution system components located in unconditioned space ^(b)	0.80	0.95
Distribution systems entirely located in conditioned space ^(c)	0.88	1.00
Proposed "reduced leakage" with entire air distribution system located in the conditioned space ^(d)	0.96	--
Proposed "reduced leakage" air distribution system with components located in the unconditioned space ^(b)	0.88	--
"Ductless" systems ^(e)	1.00	--

Notes:

(a) Default values given by this table are for untested distribution systems, which must still meet minimum requirements for duct system insulation.

(b) a) Hydronic Systems shall mean those systems that distribute heating and cooling energy directly to individual spaces using liquids pumped through closed loop piping and that do not depend on ducted, forced air flows to maintain space temperatures.

(b) Reduction in duct insulation from R-8 to R-6 shall reduce the distribution system efficiency by 0.01 for forced air systems not located entirely within the conditioned space. Further reductions from R-6 to R-4 shall reduce the distribution system efficiency by 0.02 below that for R-6. Other distribution system efficiencies between R-4 and R-8 shall be obtained by linear interpolation.

(c) Entire system in conditioned space shall mean that no component of the distribution system, including the air handler unit, is located outside of the conditioned space.

(d) Proposed "reduced leakage" shall mean leakage to outdoors not greater than 3 cfm per 100 ft² of conditioned floor area and total leakage not greater than 9 cfm per 100 ft² of conditioned floor area at a pressure differential of 0.02 inches w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. Total leakage of not greater than 3 cfm per 100 ft² of conditioned floor area at a pressure difference of 0.02 inches w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure, shall be deemed to meet this requirement without measurement of leakage to outdoors. This performance shall be specified as required in the construction documents and confirmed through field-testing of installed systems as documented by an approved independent party.

(e) Ductless systems may have forced airflow across a coil but shall not have any ducted airflows external to the manufacturer's air handler enclosure.

Supporting Information (3.3.4 & 3.4):

The purpose of this code change is to allow duct insulation to be reduced to R-4 in the simulated performance path. The current code requires R-8 duct insulation for all but ducts in floor trusses with no possibility for trade-offs. R-4 is a more reasonable mandatory minimum value. The proposed reductions in the distribution system efficiencies are based on an extensive research project conducted in 1996. The exact impact of duct insulation is highly complicated and depends on factors such as duct types, lengths, and location, heating system type, climate, and other variables. This proposal presents a reasonable simplification that permits duct-R trade-offs without

Allow reduced duct insulation in simulated performance alternative

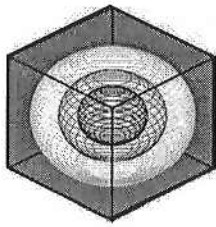
requiring thorough testing of the distribution system.

Footnote (a) should be deleted as the values are not all for untested systems and this proposal addresses minimum duct insulation requirements in section 404.2.

Substantiation: Triedler, B., R. G. Lucas, M. P. Modera, and J. D. Miller. 1996. "Impacts of Residential Duct Insulation on HVAC Energy Use and Life-Cycle Cost to Consumers." ASHRAE Transactions 102 (1). AT-96-13-4.

Referenced Standards (3.4 & 3.6):

Cost Impact (3.3.4.6): The code change proposal will not increase the cost of construction.



Energy Systems Laboratory
Texas Engineering Experiment Station
Texas A&M University System
3581 TAMU
College Station, Texas 88743-3581

Date: September 9, 2005

To: Persons Interested in IRC/IECC Code Requirements for Insulated Ducts in Texas

Subject: Requirements for R6/SEER14 Trade-Off for Residential Duct Insulation in Unconditioned Spaces

Effective January 23, 2006, the R6/SEER12 Trade-Off will no longer be acceptable as an alternative approach to compliance with energy code duct insulation requirements in Texas.

On August 28, 2002, the Energy Systems Laboratory published an open letter establishing an alternative compliance approach to satisfy the duct insulation requirements of the IRC/IECC within Texas. The alternative described in that letter was an **R6/SEER12 Trade-Off**. **This trade-off expires at midnight, January 22, 2006.** This action is taken to be consistent with the National Appliance Energy Conservation Act (NAECA) of 1987, and standards published under that law by the U.S. Department of Energy (Federal Register, Vol. 69, No. 158, August 17, 2004), effective January 23, 2006.

Effective January 23, 2006, an R6/SEER 14 Trade-Off will be allowed as an alternative compliance approach with energy code duct insulation requirements for Texas with the following restrictions.

For Gas or Electric Heating Systems:

- 1) For heating-degree-days (HDDs) less than 3,000 HDDs, the R6/SEER14 Trade-Off **may** be used as stated below for residences that use gas or electric heat.
- 2) For heating-degree-days (HDDs) greater than or equal to 3,000 HDDs, the R6/SEER14 Trade-Off **may** be used as stated below if the heating system, other than electric resistance heating, has an AFUE rating greater than or equal to 80%. The R6/SEER14 Trade-Off **may not** be used if the heating system uses electric resistance heating.

For Heat Pump Heating Systems:

- 1) For heating-degree-days (HDDs) less than 3,500 HDDs, the R6/SEER14 Trade-Off **may** be used as stated below for residences that use heat pumps to provide heating.
- 2) For heating-degree-days (HDDs) greater than or equal to 3,500 HDDs, the R6/SEER14 Trade-Off **may** be used as stated below if the heat pump has an HSPF rating greater than or equal to 7.0.

Effective January 23, 2006, options exist for insulating ducts in unconditioned spaces in Texas:

- 1) The building can be built to the requirements for duct insulation specified in the applicable IRC / IECC codes, which include prescriptive and performance methods,
OR
- 2) The building can be constructed with reduced duct insulation and an air-conditioner with increased efficiency in the **R6/SEER14 Trade-Off** method. The SEER rating for each unit will be determined by the ARI rating for the specific equipment model numbers installed (including

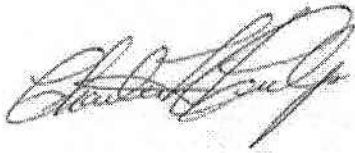
evaporator, condenser, and other system parts required). This trade-off **does not** cover supply and return air ducts located outside the building structure.

Allowable Trade-Off To Use With R-6 for Supply and Return Ducts Summary:

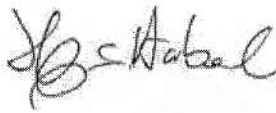
The **R6/SEER14 Trade-Off** allows R-6 duct insulation for supply and return ducts located in unconditioned spaces when an air-conditioner with a minimum SEER-14 rating is installed, subject to the HDD limits previously stated. The energy saved by increasing both the SEER rating from 13 to 14 and the return duct insulation requirements from R-4 to R-6 will offset the total annual energy lost by lowering the duct supply insulation requirements from R-8 to R-6. The Energy Systems Laboratory has calculated the energy impact and found that this **R6/SEER14 Trade-Off** meets the energy efficiency requirements of Senate Bill 5 of the State of Texas. This trade-off may be used for all one and two-family dwellings and multi-family dwellings three stories or less in height above grade. The SEER-14 air-conditioner may not be used to offset other lower energy efficiency substitutions when the **R6/SEER14 Trade-Off** is used.

Please check the Energy Systems Laboratory's web page for further information and updates at <http://energysystemslab.tamu.edu>.

Sincerely,



Charles H. Culp, P.E., Ph.D.
Associate Director



Jeff S. Haberl, P.E., Ph.D.
Associate Director



Bahman Yazdani, P.E.
Associate Director



WWW.NAHB.ORG

NATIONAL ASSOCIATION OF HOME BUILDERS

CONSUMERS WOULD PAY TOO MUCH UNDER NEW HOME ENERGY REQUIREMENTS, SAY HOME BUILDERS[Normal View](#)**DOE Report Confirms Negligible Energy Savings from Costly Change**

February 24, 2005 - Energy cost savings hyped in controversial changes to the residential energy requirements of the International Energy Conservation Code would take 40 to 90 years to materialize, depending on climate, according to a report issued today by the Department of Energy (DOE). The changes, which were initiated by proprietary interests, will ratchet up code requirements for insulation in wood-framed walls, adding at least \$600 to the cost of an average new home while saving only about \$15 a year in energy costs. The National Association of Home Builders opposes this increase in wall insulation requirements.

"NAHB supports building codes that promote energy efficiency, but home buyers should not bear the burden for expensive new requirements that provide little benefit," said Jerry Howard, executive vice president and CEO of the National Association of Home Builders (NAHB). "Seven to ten years, the average time a new home buyer lives in his new home, is a more appropriate payback period for energy cost savings."

The modifications increase wall insulation requirements (or R-values) in all climate zones for all types of wood-framed construction. According to the DOE report, the primary effect of the insulation changes was "instantly prohibiting products that would otherwise maintain market share interests and could be compliant within the original DOE RICC code change proposal if other energy efficiency measures within the building code exceed code requirements." Many insulation types, including sprayed cellulose and expanding foams, would not achieve the prescribed ratings without going to more expensive two-by-six walls.

The modifications were initiated in late 2003, after the Department of Energy proposed major reforms to simplify compliance with the International Energy Conservation Code (IECC). During a hearing on this proposal, proprietary interests pressed for last-minute modifications, including the onerous insulation requirement, which were later approved by the International Code Council as part of the 2004 supplement to the 2003 International Energy Conservation Code (IECC). Both NAHB and DOE opposed the changes.

Last year, NAHB and other groups requested that DOE do a cost-benefit analysis on the modifications because stakeholders did not have a chance to study them before they were adopted. "We applaud the Department of Energy for conducting this important analysis and making their non-biased findings public, despite pressure from interest groups to change the results," said Howard.

NAHB will use DOE's data to advocate reasonable, appropriate reforms during the next round of code hearings scheduled for late February in Cincinnati. NAHB and other organizations will urge the International Energy Conservation Code Committee to go back to DOE's originally proposed requirements.

"NAHB will continue its work to support appropriate code changes that promote energy efficiency and protect housing affordability," said Howard.

What's the "Big Deal" about R-15 Walls?

At the ICC Public Hearings in Cincinnati the IECC Code Development Committee voted in favor of R-15 in walls. The final decision rests with the building officials who attend and vote at the Final Action Hearings in Detroit in September.

SAVINGS FOR HOMEOWNERS?

Isn't it better to have R-15 in walls rather than R-13?

R-15 does provide a small increase in slowing conductive heat flow. However, if you compare increased material cost to energy savings, the answer is NO!

AIR INFILTRATION MATTERS

But isn't R-value the most important consideration in judging insulation?

No. Air infiltration is much more important. When air leaks through insulation, its R-value is decreased, and energy efficiency is reduced. The DOE states that up to 40% of heating and cooling costs are the result of air infiltration. Cellulose and expanding foam insulations have greater ability to control air infiltration. A Code requirement of R-15 will effectively eliminate these products in many markets.

PAYBACK RATE

Surely the DOE would be in favor of increased R-values for walls?

The DOE sees no economic sense to higher R-values in walls. In fact, the DOE's economic study of R-15 vs. R-13 shows a payback of 40 years in northern states and 90 years in southern states. Remember air infiltration? DOE Bulletin 10099-767 reminds consumers that the only products that effectively seal a home from air leakage are cellulose and certain foam insulations.

WHO GAINS?

Why is R-15 the magical number and why is the fiberglass industry in support?

All insulation manufacturers want the American consumer to save energy. However, the fiberglass industry chose a wall R-value (R-15) that is difficult for other insulation products to achieve. The fiberglass industry's credibility is in doubt when they choose to support an R-value only they can meet. Without construction modifications, such as insulated sheathing, cellulose and expanding foams cannot meet R-15 in a 2x4 wall.

If the fiberglass industry were really interested in improving the code, why didn't it propose higher R-values for attics, something all insulation products can do?

Good question! We can only assume that they are more interested in selling high density fiberglass wall batts that cost considerably more than traditional batts.

HOW ABOUT A "WORK-AROUND" FOR OTHER INSULATION CHOICES?

Can't cellulose and expanding foam insulations meet the R-15 requirement just by adding foam sheathing instead of wood sheathing?

Foam sheathing is a petroleum based product. As the price of oil skyrockets, so will the price of insulated sheathing. More importantly, foam sheathing requires bracing. Many home designs cannot accommodate 48 inch wall bracing requirements without changing design or eliminating doors and windows.

I'll be voting in Detroit in September. How can I get this unreasonable R-15 turned around and get people to sensibly look at wall R-values?

Vote for Sensible R-values!

EC 16

☒ YES

EC 19

☒ NO

EC 22

☒ NO

It's that simple to bring common sense back to the codes.

Sponsored by Cellulose Insulation Manufacturers

An Analysis of Floor Modifications to IECC Code Change EC48-03/04

February 23, 2005

This report provides an analysis of several changes made to DOE's comprehensive Residential IECC Code-Change (RICC) proposal (EC48-03/04) that became the basis of the residential requirements in the 2004 Supplement to the 2003 IECC. The changes, proposed "from the floor" at the September, 2003, ICC hearings are hereafter called "floor modifications" or "floor mods." This analysis looks at the energy savings and incremental costs of two of the insulation and glazing floor mods as well as their possible impact on product markets and on the code's usability and enforceability. This report is intended only to serve as background data for DOE in assessing the potential impacts of the mods.

Executive Summary

DOE's "RICC" proposal made sweeping changes to the International Energy Conservation Code (IECC) designed to significantly improve its usability and enforceability. A number of modifications to the proposal raised "from the floor" at the September, 2003, Code Development Hearings of the International Code Council (ICC) changed aspects of the DOE RICC proposal. Many of the floor modifications were successfully inserted into DOE's proposal and subsequently approved by the ICC as part of the 2004 Supplement to the 2003 IECC. This report analyzes two of the more notable floor modifications.

- **Wall R-values were increased.** In climate zones three through six, prescriptive wall cavity insulation requirements were increased from R-13 to R-15 (normally used in 2x4 walls) and from R-19 to R-21 (normally used in 2x6 walls).
- **Glazing trade-off limits.** Limits were imposed (or strengthened) on the maximum values of U-factor and SHGC permitted for glazing products. Unlike most other energy code requirements, these limits can never be exceeded, even if other compensating improvements (trade-offs) are made. The original RICC prohibited glazing U-factors, even in trade-off contexts, higher than 0.55 Btu/hr-sf-F in zones six through eight; the floor modifications lowered that value to 0.4 Btu/hr-sf-F and extended its application to zones four and five. The floor modifications also added an SHGC trade-off limit of 0.5 in zones one through three.

Wall R-value Increases

The **practical effect** of the wall cavity R-value increase was to increase the overall stringency of the thermal efficiency of the building envelope. While the use of R-15 and R-21 high density batt insulation seems to be the most straightforward prescriptive approach to achieving this increase, there are other methods to meet the R-15 and R-21 requirements. In order to avoid narrowing the list of products capable of meeting the

prescriptive requirements, insulating sheathing is needed so that other cavity insulation types, including sprayed cellulose and expanding foams, can achieve the R-15 level (in 2x4 walls) or the R-21 level (in 2x6 walls). Use of these products will consequently require a builder to use a “trade-off” path to demonstrate compliance or will require the use of insulating sheathing in addition to structural sheathing and/or engineered cross bracing.

The **primary cost** associated with this floor modification is the cost difference between standard-density and high-density fiberglass batts or the costs associated using insulating sheathing instead of or in addition to other sheathing methods such as OSB sheathing. The incremental costs for the high density fiberglass products can be high in markets where these products are not commonly used—California data reports these at \$0.42 to \$0.44/ft². In Oregon, where the state code requires R-21, the incremental cost of this insulation level is reported at only \$0.10/ft². There may be little to no cost increase if insulating sheathing is used to obtain the additional R-2 requirement, but many builders prefer not to use insulating sheathing for reasons other than cost.

DOE calculated the **energy cost savings** resulting from this floor modification when fiberglass batts are used. A 2000-sf house was simulated using the DOE-2 energy simulation program in 239 U.S. locations. The calculated energy costs assume a gas price of \$0.90/therm and an electricity price of \$0.0947/kwh. Overall, the annual energy cost savings from the increased wall R-values average about \$15 per home, which amounts to 2% to 3% of HVAC energy costs.

Combining the increased costs and the energy savings of high density batt insulation allows an analysis of the **economic viability** of this floor modification. The simple payback period assuming the higher insulation data (from California) ranges from about 40 years in the northern affected zones to about 90 years in the southern zones. With the much lower Oregon insulation cost data, the simple payback is reduced to 9 to 21 years. Life-cycle cost (LCC—assuming a 50-year life, a 30-year mortgage with a 6% interest rate, a 6% nominal discount rate (3.3% real discount rate), and a 1% property tax) for the higher insulation levels are reduced if the lower insulation cost is assumed, but increase if insulation cost is at the higher estimate.

It is important to once again note that R-2 insulating sheathing can also be used to achieve the higher insulation requirements. However, as will be discussed later, that option involves additional considerations that complicate a direct cost comparison with the high-density batt option.

Glazing Trade-off Limits

The **primary effect** of the glazing trade-off limits is to set an absolute minimum (or maximum) value that can be used in a compliant home. For example, even if energy consumption is shown to be equal to or better than that resulting from the prescriptive code requirements, glazing products cannot be “traded down” beyond the limits. While this floor modification may ultimately result in energy savings, the trade-off limits clearly affect the market by instantly prohibiting products that would otherwise maintain market share interests and could be compliant within the original DOE RICC code change proposal if other energy efficiency measures within the building exceed code

requirements.

The U-factor limit of 0.4 Btu/hr-sf-F has the effect of eliminating almost all types of aluminum windows and almost all windows that do not have low-emissivity coatings. The SHGC upper limit of 0.5 has the effect of eliminating almost all windows not containing low-emissivity coatings, tinting, or reflective glass. Since many homeowners may not want tinted or reflective glass, this is expected to lead to the use of low-E insulating glass virtually everywhere the code is adopted. The biggest impact of this limit will be to effectively eliminate single-pane glass, which is still common in Florida and pockets of the south near the Gulf Coast. In mild Zone 3 locations, most notably coastal California, the forced SHGC limit can actually raise energy costs because higher solar gains are advantageous in these chilly climates.

One tangible benefit of the SHGC trade-off limit is a potential **reduction in peak cooling loads** for homes that are otherwise energy-equivalent to a baseline code home. This could prevent a summer peak load increase of about 1 kW per house for certain trade-offs that increase the SHGC well above 0.50 (for example if the improvement allowing the SHGC trade-off is a high efficiency furnace).

RECA COMMENTS

RELATING TO:

CGI - ENERGY CONSERVATION

Mr. Anderson,

Attached please find written comments from the Responsible Energy Codes Alliance (RECA) on the proposed Massachusetts Building Code, 7th Edition. Kate Offringa, representing RECA, presented the substance of these comments at the May 23rd meeting of the Board of Building Regulations and Standards. Thank you for the opportunity to participate in Massachusetts' code adoption process. Please feel free to contact me with any questions.

Thanks,

Eric Lacey

Brickfield, Burchette, Ritts & Stone, P.C.
1025 Thomas Jefferson St., N.W.
8th Floor, West Tower
Washington, D.C. 20007-5201

(202) 342-0800
(202) 342-0807 (fax)
elacey@bbrslaw.com

RECA

RESPONSIBLE ENERGY CODES ALLIANCE

1200 18th Street, NW, Suite 900
Washington, DC 20036

(PH) 202-857-0666
(FAX) 202-331-9588

www.RECA-codes.org

May 22, 2006

Gary Moccia, Chairman
Board of Building Regulations and Standards
Department of Public Safety
One Ashburton Place – Room 1301
Boston, MA 02108

Re: Comments on the Proposed Massachusetts Building Code

Dear Chairman Moccia:

We are writing in support of Massachusetts' proposed adoption of the energy efficiency provisions of the *Massachusetts Building code, 7th Edition* for one- and two-family dwellings (chapter 61). This would be a significant improvement over the current energy conservation/efficiency provisions of the *Massachusetts Building Code*. Given the rapidly escalating cost of energy in the nation, and particularly in your region, this crucial step could come at no better time. Thank you for the opportunity to present our views.

RECA is a consortium of energy efficiency advocates, product and equipment manufacturers, and trade associations (a list of RECA members is attached). We believe that a mandatory, state-of-the-art, uniform building energy code is the best mechanism for ensuring quality construction that adequately conserves available energy resources and that the *International Energy Conservation Code (IECC)* is best the code available for the state to adopt. We are very familiar with the International family of codes, including not only the *IECC*, but also the *International Building Code (IBC)* and the *International Residential Code (IRC)*. RECA members have actively participated in the ICC process since its inception and have been involved in the model energy code development process for two decades.

Because the proposed *Massachusetts Building Code, 7th Edition* shares many common elements with the *IECC* and the *IRC*, RECA offers the following comments, clarifications and recommendations:

RECA Generally Supports the Adoption of the *IECC* Nationwide Without Substantive Weakening Amendments

RECA supports the adoption of the *IECC* or the *IRC* nationwide without substantive weakening amendments. The international codes are designed to work as integrated, complete codes, and any weakening amendments to individual sections may dilute the overall effectiveness of the code. The proposed Massachusetts Building Code already includes many of the insulation values and other requirements set out in the 2004 *IECC* (such as a single set of prescriptive criteria and no window/wall ratio requirements), although many provisions are also drawn from the 2003 *IRC/IECC*. The adoption of the full 2004 version of the *IECC* would ensure consistency and that the state obtains the full benefits of an upgraded, up-to-date model energy code.

However, we understand that the state has put considerable work into developing a state specific version of the model energy code and that it may be too late at this time to adopt the complete 2004 *IECC*. Obviously, we want to avoid any substantial delays in adoption. With that in mind, we urge that, at a minimum, the Board resist any efforts to reduce the stringency of the pending proposal, while considering the further specific improvements identified below, drawn from the newest versions of the *IECC*, that will enhance the new Massachusetts code and better ensure the energy efficiency gains that the state seeks from this new energy code.

RECA Recommendations for Massachusetts

We have reviewed the proposed code and have identified three areas that could be improved to capture energy efficiency gains while bringing the code closer to the *IECC*.

1. Prescriptive Envelope Requirements for New Buildings and Additions. It is unclear why the proposed Massachusetts Building Code contains two different prescriptive envelope tables—one for new construction and one for additions to existing residential buildings. The most recent versions of the *IRC* and the *IECC* do not contain separate charts for new construction and additions. The insulation values and U-factors are inexplicably lower in some cases and identical in others. The following is a comparison of the prescriptive tables for Massachusetts:

	MBC New (Table 6107.1)	MBC Additions (Table 6101.3)	2004 <i>IECC</i> (Table 402.1)
Fenestration U-Factor	.35	.39	.35
Ceiling R-Value	R-38	R-37	R-38
Wall R-Value	R-21	R-13	R-21/15+5
Floor R-Value	R-19	R-19	R-30
Basement Wall	R-10	R-10	R-10/13
Slab R-Value/Depth	R-10, 4ft	R-10, 4ft	R-10, 2ft

A single table with uniform requirements for both new construction and additions would promote clarity and simplify compliance and enforcement statewide. By focusing on a single set of prescriptive values, the code will encourage economies of scale and competition in providing insulation and windows to meet those values, likely resulting in a lower cost of construction. RECA recommends the adoption of Table 402.1 in the 2004 *IECC*. Many of the insulating

requirements are identical or similar to those being proposed in Massachusetts. This table is the product of extensive efforts by the nation's code officials, industry leaders, and experts in energy efficiency.

2. Maximum Fenestration U-Factor – The proposed Massachusetts Building Code, like the 2004 *IECC*, has no window area limitation for its prescriptive path and does not have varying efficiency levels by window area. The ICC recognized that a backstop was necessary to protect against negative impacts from this decision – specifically that if unlimited windows were to be permitted, it is necessary that homeowners be protected from poorly performing windows resulting from trade-offs with other energy efficiency measures. As a result, the *IECC* incorporates mandatory maximum fenestration U-factors, which limit the ability to trade-off window U-factors (see 2004 *IECC* section 402.5.1).

The 2004 *IECC* specifically requires for Massachusetts' climate zone that the weighted average maximum fenestration U-factor permitted using tradeoffs is 0.40. Since it is a weighted average, it will allow some windows to have higher U-factors, so long as the weighted average is at or below 0.40. The *IECC* also allows 15 square feet of glazing to be exempted from this provision in recognition of common construction practices for decorative or other specialty products. It should be kept in mind that even at a 0.40 U-factor, the window has less insulating value than an un-insulated wall. The failure to mandate reasonable maximum U-factors could result in substantial condensation and comfort problems. Uncomfortable windows often lead to far greater energy use as occupants adjust heating temperature setpoints upward to offset discomfort.

Efficient windows are widely available and are a crucial element in an efficient home in Massachusetts' climate. The tradeoff cap will ensure that windows are not the weakest link in a home's efficiency. We recommend that the following new section be added to the code (modeled on the *IECC* section):

6101.4 Maximum fenestration U-factor. The area weighted average maximum fenestration U-factor permitted under this code, including when using any compliance alternative or trade-off (specifically sections 6107.3, 6108 and 6109), shall be 0.40.

This provision does not affect the underlying baseline efficiency level required by the code. It would not apply when builders follow the prescriptive path. It would only apply where some form of compliance trade-off is elected and would ensure that a reasonably efficient window is installed.

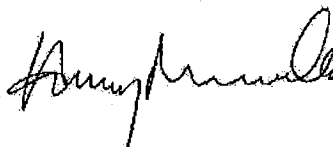
3. REScheck – It is important that if Massachusetts is going to permit REScheck as a compliance alternative, that the state specify the correct version of REScheck. Versions of REScheck presently available incorporate window area trade-offs. This approach would be inappropriate in states like Massachusetts that propose to eliminate window area as a consideration in their prescriptive paths, because trade-offs under such versions of REScheck would not produce energy efficiency equivalent to the level in the prescriptive path. DOE is in the process of developing a 2006 *IECC* version of REScheck, which should not reflect window area trade-offs. This approach would better match the proposed new Massachusetts

requirements and approach. As a result, Massachusetts should request that the Department Of Energy provide a state-specific version (using values adopted by Massachusetts) of REScheck for the 2006 *IECC*; if no-state-specific version is forthcoming, Massachusetts should use the 2006 *IECC* version, rather than earlier versions of the software.

Conclusion

RECA applauds the efforts of the state to develop and implement an improved building code, including updated energy conservation/efficiency provisions. We urge you to carefully consider our suggestions above. Please contact me at (202) 530-2214 if you have any questions.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Harry Misuriello", written in a cursive style.

Harry Misuriello
Chairman

RECA

RESPONSIBLE ENERGY CODES ALLIANCE

RECA is a broad-based consortium of energy efficiency professionals, product and equipment manufacturers, and trade associations with expertise in the adoption, implementation and enforcement of building energy codes nationwide. RECA is dedicated to improving the energy efficiency of homes in Massachusetts and throughout the U.S. through greater use of energy efficient practices and building products. It is administered by the Alliance to Save Energy, a non-profit coalition of business, government, environmental and consumer leaders that supports energy efficiency as a cost-effective energy resource under existing market conditions and advocates energy-efficiency policies that minimize costs to society and individual consumers.

Alliance to Save Energy
American Chemistry Council
American Council for an Energy Efficient Economy
Cardinal Glass Industries, Inc.
CertainTeed Corporation
Chemical Industry Council of Illinois
Guardian Industries Corporation
Hogan & Hartson LLP
Johns Manville Corporation
Knauf Insulation
Midwest Energy Efficiency Alliance
National Fenestration Rating Council
Northeast Energy Efficiency Partnerships, Inc.
North American Insulation Manufacturers Association
Owens Corning
Pactiv Corporation
Polyisocyanurate Insulation Manufacturers Association
PPG Industries, Inc.
Southwest Energy Efficiency Project

APA - ENGINEERED WOOD ASSOC.

COMMENTS

C 61 - PRESCRIPTIVE ENVELOPE

(NOTE: INFORMATION ALSO
PROVIDED ON DESIGN

PHILOSOPHY* OF BRACED WALLS
IS EXTENSIVE BUT AVAILABLE)

--*CURRENTLY NOT POSTED--

Riley, Tom (BBR)

From: Joe Charland [Joe.Charland@apawood.org]
Sent: Wednesday, June 21, 2006 2:01 PM
To: Anderson, Robert (BBR); Riley, Tom (DPS)
Cc: Spencer, Kimberly (DPS); gary.moccia.isd@ci.boston.ma.us
Subject: APA public comments, BBRS meeting, May 23, 2006

Gentlemen,

Thank you for the opportunity to address the board publicly regarding the increased R-values in the proposed MA Energy Code. Please find attached APA's testimony and a copy of the APA's literature "Introduction to Wall Bracing". The literature will help give you a better understanding of wall bracing per the IRC and how the energy code may affect it. If there are any questions or comments please don't hesitate to contact me.

<<Intro to wall bracing (F430).pdf>>

Thank, you, <<2006 MA APA comments R2 (JC).doc>>

Joe Charland

Engineered Wood Specialist

Field Services Division

APA- The Engineered Wood Association

Manalapan, NJ 07726

Phone (732) 446-3004 · Fax (732) 446-0305

APA Help Desk (253) 620-7400

APA Website – www.apawood.org · e-mail: joe.charland@apawood.org

Comments to the Proposed Modifications to the Energy Codes of Massachusetts;

Submitted by: Joe Charland
Representing: APA- The Engineered Wood Association
Address: 25 Old Queens Boulevard
Manalapan, New Jersey, 07726
E-mail: Joe.Charland@apawood.org
Phone: 732-446-3004
Fax: 732-446-0305

APA would encourage the State of Massachusetts to disapprove any increase in the prescriptive wall system R-values beyond R-19.

- The decision of the committee to increase the wall system R-values to R21 would conflict between with both the 2006 IRC and the IECC.
- DOE testimony and evaluation supported the current wall system R-value level of R19. They point out that the additional expense of increasing the R-value of a 2x6 wall from R19 to R21 is **not** cost effective. They also reported a payback period of 40 to 90 years with an annual energy savings of \$10 to \$15 in most of the U.S. This is a very small payback as compared to the initial cost. The increase of wood frame wall R-values by R2 was not supported by the DOE and does not conserve energy consumption to a significant level.
- **The approval of R21 prescriptive wall systems contributes to dramatically higher construction costs in meeting braced wall panel requirements, while eliminating the options for design with the IRC:**
The IRC currently contains a number of exceptions to the requirement for 48" minimum width bracing panels. These alternative bracing methods vary from 16 to 32 inches in width, each with their own limitations. These commonly used alternate bracing schemes were designed based on the demand from the public to permit traditional-looking details in modern housing without compromising the structural integrity of the structure. When foam wall sheathing is used exclusively in a structure to meet the additional R2 prescriptive requirements for wood frame walls, none of the alternative bracing methods may be used unless the structure is designed (IBC), sheathed with **both** foam and structural sheathing or constructed with expensive proprietary narrow bracing panels.

As an example, if prescriptive methods incorporating wood structural panels are used to provide wall bracing segments as narrow as 16" in width, the cavity insulation must be a high-density fiberglass in order to meet the increased prescriptive wood framed R-values in common wood-frame construction. The DOE's evaluation of the impact from these changes found the cost of wall insulation increased by a minimum of \$.10 per square foot. Our investigation has found the additional cost to be in excess of \$.15 per square foot in the state of Oregon where the R21 minimum prescriptive wall system requirements have been in place for over a decade.

Even more important, the maximum 25% structural wall sheathing permitted by 2006 IRC Table N1102.1, severely limits the use of the bracing tables in the IRC to areas with a design wind of less than 100 mph and Seismic Design Categories A and B, i.e., a two-story home in 110 mph wind speed category requires 30% structural bracing on all first-floor wall lines as noted in Table R602.10.1. In much of the state where

construction is currently booming, residences will have to be built, at least in part, in accordance with the IBC (engineered), utilize high-density batts or be double sheathed. Each of these options put a financial burden on the homebuyer with little or no offset due to energy savings. Note that in computing the payback costs above, DOE only considered the cost of the initial insulation in generating the 40 to 90 year payback. With current trends in residential construction toward an increasing number and size of windows and doors in exterior wall lines, it is critical to builders and homeowners that the structural integrity of the wall systems not be compromised. It is important to understand that the family of codes does not give the option of building a safe structure *or* an energy efficient one. Both criteria must be met.

- **The approval of R21 prescriptive wall systems means reduction in accessibility of home ownership:** A survey by the NAHB of the cost for such batts showed that R15 batts cost up to twice as much as R13 batts. Our own survey of costs in the Pacific Northwest where R21 fiberglass is prescribed by local jurisdictions finds from a 38% to 45% cost increase for R21 over more conventional R19. If 2x6 framework is used to permit the use of cavity insulation to meet the new R21 insulation requirements and still permit code-required bracing (very often far in excess of the 25% that is permitted in Footnote g of IRC Table 1102.1), the extra cost for the 2x6 framing package for a modest home will be more than \$700. As stated above, the Dept. of Energy projects a payback in 40 to 90 years. Given an energy savings of \$15 per year, the DOE apparently places the cost of the increase from \$600 – \$1350. The NAHB can testify as to the negative impact this will have on home ownership in the US in specific terms.
- **The higher prescriptive R-values create an unlevel playing field for cavity insulations other than fiberglass:** Neither cellulose nor expanding foam can meet more than R19 levels in 2x6 framing. This requires the builder to use non-structural foam wall sheathing or high density fiber glass batts in order to meet the minimum R15 and R21 requirements for the exterior wall system as noted in the recent DOE report on the impact of these higher prescriptive wall system R-values.

We all have an obligation to make sure that code change benefits are balanced against cost burdens. We also must make sure that the Energy Committee members are able to understand the structural issues associated with energy code enforcement. Without such an understanding, the benefit of the IECC is questionable.

For the above reasons, we recommend that the committee's actions for denial of the additional R2 requirement for prescriptive wall system insulation.

P. CRAIG

COMMENTS

C 53

- SECTION 5301.2.1.2

EXPLICITLY RECOMMENDS

ENGINEERED STORM

SHUTTER DEVICES

IN LIEU OF

HEAVY DUTY FENESTRATION

I very much agree that section 53 should include an exception for engineered storm shutters. I think the exception plywood is very misleading and I do not see the same testing standards being applied.

I'll draft some amended text for BBRS consideration.

Sincerely,

Paul Craig

6/26/2006

Riley, Tom (BBR)

From: Paul Craig [paulc@shadeandshutter.com]
Sent: Friday, June 23, 2006 4:18 PM
To: Riley, Tom ((BBR))
Subject: Re: ICC-ES acceptance criteria

Tom-

Here is my suggested text- your comments are welcomed.
Paul

Proposed modifications to Massachusetts Building Planning and Construction for Single and Two Family Dwellings

5301.2.1.2 Internal Pressure (Exceptions)

Exception: Engineered Storm Shutter Devices, including aluminum rollshutter systems and polycarbonate storm panel systems or other impact resistant coverings designed and tested to meet the requirements of the Large Missile Test of ASTM E 1996 and of ASTM E 1886 and related fastening requirements.

On Jun 23, 2006, at 1:27 PM, Riley, Tom ((BBR)) wrote:

Many thanks Paul and hope to see you or otherwise be talking with you soon.

Tom Riley
Code Development Manager

DPS/BBRS

-----Original Message-----

From: Paul Craig [mailto:paulc@shadeandshutter.com]
Sent: Friday, June 23, 2006 12:59 PM
To: Riley, Tom (DPS)
Subject: ICC-ES acceptance criteria

Tom-

Here is a copy of the acceptance criteria for storm shutters as published by ICC-ES.

6/26/2006



ACCEPTANCE CRITERIA FOR SHUTTERS FOR PROTECTION AGAINST WIND-BORNE DEBRIS

AC294

Approved February 2005

Effective March 1, 2005

PREFACE

Evaluation reports issued by ICC Evaluation Service, Inc. (ICC-ES), are based upon performance features of the International family of codes and other widely adopted code families, including the Uniform Codes, the BOCA National Codes, and the SBCCI Standard Codes. Section 104.11 of the *International Building Code*® reads as follows:

The provisions of this code are not intended to prevent the installation of any materials or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

Similar provisions are contained in the Uniform Codes, the National Codes, and the Standard Codes.

This acceptance criteria has been issued to provide all interested parties with guidelines for demonstrating compliance with performance features of the applicable code(s) referenced in the acceptance criteria. The criteria was developed and adopted following public hearings conducted by the ICC-ES Evaluation Committee, and is effective on the date shown above. All reports issued or reissued on or after the effective date must comply with this criteria, while reports issued prior to this date may be in compliance with this criteria or with the previous edition. If the criteria is an updated version from the previous edition, a solid vertical line (|) in the margin within the criteria indicates a technical change, addition, or deletion from the previous edition. A deletion indicator (→) is provided in the margin where a paragraph has been deleted if the deletion involved a technical change. This criteria may be further revised as the need dictates.

ICC-ES may consider alternate criteria, provided the report applicant submits valid data demonstrating that the alternate criteria are at least equivalent to the criteria set forth in this document, and otherwise demonstrate compliance with the performance features of the codes. Notwithstanding that a product, material, or type or method of construction meets the requirements of the criteria set forth in this document, or that it can be demonstrated that valid alternate criteria are equivalent to the criteria in this document and otherwise demonstrate compliance with the performance features of the codes, ICC-ES retains the right to refuse to issue or renew an evaluation report, if the product, material, or type or method of construction is such that either unusual care with its installation or use must be exercised for satisfactory performance, or if malfunctioning is apt to cause unreasonable property damage or personal injury or sickness relative to the benefits to be achieved by the use of the product, material, or type or method of construction.

Copyright © 2005

ACCEPTANCE CRITERIA FOR SHUTTERS FOR PROTECTION AGAINST WIND-BORNE DEBRIS

1.0 INTRODUCTION

1.1 Purpose: The purpose of this acceptance criteria is to establish requirements for impact protective shutter systems to be recognized in an ICC Evaluation Service, Inc. (ICC-ES), evaluation report under the 2003 *International Building Code*® (IBC), the 2003 *International Residential Code*® (IRC), the 1999 *Standard Building Code*® (SBC), and the 1999 *Standard For Hurricane Resistant Residential Construction* (SSTD 10). Bases of recognition are IBC Section 104.11, IRC Section R104.11, SBC Section 103.7, and SSTD 10 Section 101.4. Applicable code sections are IBC Section 1609; IRC Section R301.2.1; SBC Appendix J; and SSTD 10 Section 604.

1.2 Scope:

1.2.1 This criteria applies to permanently installed structural aluminum roll-up shutters (shutter) intended to provide an impact-resistant covering for glazed openings.

1.3 Codes and Reference Standards:

1.3.1 2003 *International Building Code*® (IBC), International Code Council, Inc.

1.3.2 2003 *International Residential Code*® (IRC), International Code Council, Inc.

1.3.3 1999 *Standard Building Code*® (SBC).

1.3.4 1999 *Standard for Hurricane Resistant Residential Construction* (SSTD 10).

1.3.5 AA ADM 1-00, Aluminum Design Manual, Aluminum Association.

1.3.6 AA ASM 35-80, Aluminum Sheet Metal Work in Building Construction, Aluminum Association.

1.3.7 ASTM E 330-97e¹, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference, ASTM International.

1.3.8 ASTM E 1886-97, Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic pressure Differentials, ASTM International.

1.3.9 ASTM E 1996-01, Standard Test Method for Performance of Exterior Windows, Glazed Curtain Walls, Doors, and Storm Shutters Impacted by Windborne Debris in Hurricanes, ASTM International.

1.3.10 ICC-ES Acceptance Criteria for Expansion Anchors in Concrete and Masonry Elements (AC01), dated October 2004.

1.3.11 ICC-ES Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Concrete or Masonry (AC106), dated June 2004.

1.3.12 ICC-ES Acceptance Criteria for Mechanical Anchors in Concrete Elements (AC193), dated June 2004.

1.3.13 ANSI/AF&PA NDS-2001, National Design Specification for Wood Construction, American Forest & Paper Association.

1.4 Definitions:

1.4.1 Allowable Design Load: The maximum wind load that the shutter is designed to withstand.

1.4.2 Design Load: The wind load, determined in accordance with the applicable code, that the shutter is required to withstand.

1.4.3 Roll-up Shutter: A system of horizontal slats in vertical tracks that are permanently attached to a building, and that are designed to resist wind loads and windborne debris. The slats are rolled down and latched into place when needed, and rolled up into a storage compartment when not in use.

1.4.4 Structural System: An element or assembly of elements in a structure, used to transfer a load from the source of the load to the ground.

1.4.5 Test Load: The maximum load achieved during testing. The test load shall be at least twice the allowable design load.

2.0 BASIC INFORMATION

2.1 General: The following information shall be submitted:

2.1.1 Product Description: Complete information concerning material specifications, thickness, size and the manufacturing process.

2.1.2 Installation Instructions: Installation details, fastening methods and limitations.

2.1.3 Packaging and Identification: A description of the method of packaging and field identification of the shutter. Identification provisions shall include the manufacturer's name and/or trademark, the product name and the evaluation report number.

2.1.4 Field Preparation: A description of the methods of field-cutting, anchoring and finishing.

2.2 Testing Laboratories: Testing laboratories shall comply with Section 2.0 of the ICC-ES Acceptance Criteria for Test Reports (AC85) and Section 4.2 of the ICC-ES Rules of Procedure for Evaluation Reports.

2.3 Test Reports: Test reports shall comply with AC85.

2.4 Product Sampling: Sampling of the roll-up shutters for tests under this criteria shall comply with Section 3.2 of AC85.

3.0 TEST AND PERFORMANCE REQUIREMENTS

3.1 General:

3.1.1 Testing of systems attached to concrete masonry unit (CMU) walls shall qualify the system for attachment to concrete walls for the same loading conditions.

3.1.2 Acceptance of systems not tested may be based on other tested assemblies, provided documentation demonstrates that the tested assembly is the weakest assembly.

3.2 Materials: Mill certificates shall be provided for the specific coil or lot of material used to produce the

ACCEPTANCE CRITERIA FOR SHUTTERS FOR PROTECTION AGAINST WIND-BORNE DEBRIS

components of the shutter used for testing for impact and transverse wind load. As an alternative, the mechanical properties of the roll-up shutter may be determined by testing, in accordance with Section 1.2 of AA ADM 1, of materials taken from the systems used in the impact and transverse wind load testing. If F_y and F_u exceed specified values by 7 ksi, the load tests in Sections 3.4 and 3.5 shall be reduced by the percentage over that specified.

The product specifications shall be included in the quality control documentation (Section 5.0).

3.3 Fasteners: Fasteners used to attach the shutter to a CMU or concrete wall shall comply with the requirements of AC01, AC106 or AC193, as applicable. Fasteners used to attach the shutter to wood framing shall comply with the requirements of the NDS. Structural calculations shall be submitted showing that the maximum loads on fasteners do not exceed the allowable loads determined in accordance with the NDS or applicable acceptance criteria.

3.4 Impact: Impact testing shall be in accordance with Section 4.1. The test specimen shall be mounted in the same way that it is to be installed in the field. Conditions of acceptance are as stated in the test standards referenced in Section 4.1.

3.5 Transverse Wind Load: Testing for transverse wind loading shall be in accordance with Section 4.2. Each shutter shall be tested in the maximum size to be included in the evaluation report. A minimum of three identical shutters (configuration, mounting hardware, substrate, etc.) shall be tested.

The allowable design load shall be the lowest ultimate test load divided by a safety factor of 2.0. Shutters with a shorter span than what was tested shall be limited to the allowable loads of the tested shutter.

4.0 TEST METHODS

4.1 Impact Testing: Testing shall be in accordance with ASTM E 1886 and ASTM E 1996.

4.2 Transverse Wind Loading: The assembly setup and test equipment shall be as indicated in ASTM E 330. However, Test Procedure "B" shall be modified as follows and used for both the positive and negative pressure test:

4.2.1 Apply one half of the design load and hold for 60 seconds. Record the deflection at the end of the 60-second interval and then release the pressure. The recovery period for stabilization shall not be less than 1 minute nor more than 5 minutes at zero load. At the end of the recovery period, record the deflection in the panel.

4.2.2 Apply the design load and hold for 60 seconds. Record the deflection at the end of the 60-second interval

and then release the pressure. The recovery period for stabilization shall not be less than 1 minute nor more than 5 minutes at zero load. At the end of the recovery period, record the deflection in the panel.

4.2.3 Apply the design load again and hold for 30 seconds. Loading is then continued, in maximum 10 psf increments, up to the ultimate or maximum test load, but not less than two times the design load. At each increment, the load is held for 60 seconds, and pertinent deflection readings and visual observations are recorded. Pressures are not released prior to increasing pressure to the next incremental load. If the test load is reached prior to the assembly failure, the pressure is released. The recovery period for stabilization shall not be less than 1 minute nor more than 5 minutes at zero load. At the end of the recovery period, record the deflection in the panel.

4.2.4 In addition to the requirements of Section 12 of ASTM E 330, the report shall include each load, hold time, deflection, permanent set, and recovery.

5.0 QUALITY CONTROL

5.1 A quality control manual complying with the ICC-ES Acceptance Criteria for Quality Control Manuals (AC10) shall be submitted.

5.2 Third-party follow-up inspections are not required under this acceptance criteria.

5.3 Material specifications shall be included in the quality control manual for all materials used to fabricate the shutters, including tracks and mounting hardware.

6.0 EVALUATION REPORT RECOGNITION

The following items shall be included in the evaluation report:

6.1 The allowable wind loads in pounds per square foot (psf).

6.2 Missile level (in accordance with ASTM E 1996).

6.3 Installation information submitted in accordance with Section 2.1.2.

6.4 If the shutter is porous, a condition of use requiring the glazing to be designed for the applicable components, and cladding wind loads and separation requirements between the shutter and glazing, shall be included in the evaluation report.

6.5 A condition of use stating that the structural system to which the shutter is attached is outside the scope of the report. ■

F.C.A.M., INC
FILING
COMMENTS

- 5313.4 (SPRINKLERING)

Riley, Tom (BBR)

From: Bill Scoble [bscoble@townhall.westwood.ma.us]
Sent: Friday, June 23, 2006 1:04 PM
To: Riley, Tom (DPS)
Subject: FCAM Comments



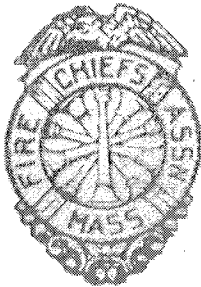
BBRS 7th Edition 1
&2 Family S...

Tom:

Please see attached comments regarding the installation of sprinklers in the One and Two Family Code section of the 7th edition of the Building Code. I will also fax a copy.

Thank you for your reminder.

Bill Scoble
President - FCAM



Fire Chiefs' Association of Massachusetts, Inc.

P.O. Box 97, North Andover, MA 01845-0097

Chief William P. Scoble, Westwood
President – 781-320-1066
Chief Kenneth R. Willette, Concord
First Vice President– 978-318-3540
Chief Gerard A. Dio, Worcester
Second Vice President – 508-799-1808
Chief William V. Dolan, North Andover
Secretary/Treasurer- 978-682-2272

Phone: 978-682-2272
Fax Line: 978-682-2668
E-mail: fcamchiefs@aol.com
Web Site: <http://www.fcarn.org>

Chief Robert A. DiPoli, Ret.
Governmental Affairs Director
508-660-6780

DIRECTORS

District 1

Chief George W. Baker
508-539-1454

District 2

Chief Kevin C. Robinson
781-834-5578

District 3

Chief Stephen J. Rivard
508-508-646-2814

District 4

Chief Thomas J. Ronayne III
781-821-5095

District 5

Chief James P. Tutko
978-774-2425

District 6

Chief Kevin MacCaffrie
781-275-6327

District 7

Chief Leonard N. Laporte
508-764-5430

District 8

Chief Edward J. Stark, Jr.
508-829-0266

District 9

Chief Dennis M. Annear
978-544-3145

District 10

Chief Thomas Coulombe
413-967-9631

District 11

Chief P. Robert Wallace
413-525-5430

District 12

Chief Hubert T. White
413-684-0500

District 13

Chief Malcolm R. Larson
617-698-1980

District 14

Chief Gary T. Daugherty
508-497-2325

District 15

Chief James C. Broderick
978-948-8138

Chaplains

Reverend Marc Tremblay
508-285-4462

Reverend Lawrence Provenzano
413-567-5901

Immediate Past President
Chief Steven P. Edwards
508-255-4003

June 23, 2006

Gary Moccia, Chairman
Board of Building Regulations and Standards
One Ashburton Place, Room 1301
Boston, MA 02109

RE: Proposed 7th Edition Building Code – One and Two family Dwellings

Dear Mr. Moccia:

On behalf of the Fire Chiefs Association of Massachusetts, I testified at last month's hearing regarding the requirement for the installation of sprinklers in One and Two Family Dwellings in the new 7th edition of the Building Code.

In my comments I urged the Board to reduce the square foot initiation point from 14,400 square feet to 7,500 square feet. Although I feel that even 7,500 is too high, it would be a number consistent with our current code for commercial buildings, and a good starting point. We must remember that the vast majority of fire deaths occur in residences, and we should strive to protect people in their homes. To leave the initiation point at 14,400 square feet would only protect the richest of the rich, and this would be a bad message to send.

At the hearing, our Association also supported the Fire Marshal's request to establish a study committee to investigate the requirement for the installation of sprinklers in all new one and two family homes. This study committee would be mandated to report back to the Board in one year.

We are aware of the current proposed amendment to Section 5313.4 from Maurice Pilette, P.E. requiring residential sprinklers, which was filed after the last hearing. This amendment proposes to accomplish the same goals that we seek to achieve. With the implementation date of January 1, 2008, there would be sufficient time for all interested parties to plan for and successfully implement this code change.

There is no question that sprinklers save lives and property. The installation cost of residential sprinklers is not an overriding reason to jeopardize lives and property. The statistics exist to clearly prove this point. It is now time for Massachusetts to move to the forefront in safeguarding its citizens.

Sincerely,

William P. Scoble
President, Fire Chiefs Association of Massachusetts

"United To Face The Future"

RAIMONDO

O'DONOGHUE

ORTIZ

PACITO

COMMENTS

5313.4 SPRINKLERING

ALL SUPPORT M. PILETTE

SPRINKLERING

PROPOSAL

Riley, Tom (BBR)

From: Anderson, Robert (BBR)
Sent: Sunday, June 25, 2006 3:15 PM
To: Riley, Tom (BBR)
Subject: FW: 5313.4 Automatic Sprinkler Systems

Tom –

I am not sure if you have this comment.

Thanks, Rob

From: Tom Raimondo [mailto:tomraimondo@comcast.net]
Sent: Friday, June 16, 2006 9:22 AM
To: Anderson, Robert (BBR)
Subject: 5313.4 Automatic Sprinkler Systems

6-16-06

Mr. Robert Anderson
Department of Public Safety
Board of Building Regulations and Standards
1 Ashburton Place, Room 1301
Boston, MA. 02108-1618

Subject: Reconsideration to Proposed Fire Sprinkler Requirements

Dear Mr. Anderson,

I am writing to question the proposed change to the MSBC regarding Section 5313.4 "Sprinklers". When one considers the residential fire death toll in the US and single family homes, it seems rather illogical that homes greater than 14,400 sq. ft (even with total aggregate included, i.e. basements) would be the only homes to be protected. I would have to question how many residents of the State would remain unprotected living in homes smaller than the proposed threshold. I struggle to understand the reasoning behind the square footage requirement and can't imagine its origin.

In this day and age, why when we have the proven technology to drastically reduce the number of citizens that parish in their homes, would we choose to overlook so many? Please apply common sense to the MSBC and adopt Mr. Pilette's proposed revisions to **5313.4 Automatic Sprinkler Systems** and make a statement for others to follow. Residential Fire Sprinklers.... It's time has come.

Sincerely,

Tom Raimondo
781-279-4344

6/26/2006

6-12-06

Mr. Robert Anderson
Department of Public Safety
Board of Building Regulations and Standards
1 Ashburton Place, Room 1301
Boston, MA. 02108-1618

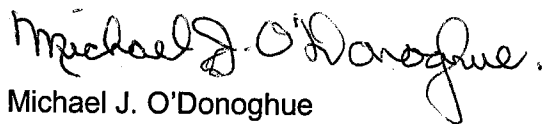
Subject: Reconsideration To Proposed Fire Sprinkler Requirements

Dear Mr. Anderson,

I am writing to question the proposed change to the MSBC regarding Section 5313.4 "Sprinklers". When one considers the residential fire death toll in the US and single family homes, it seems rather illogical that homes greater than 14,400 sq. ft (even with total aggregate included, i.e. basements) would be the only homes to be protected. I would have to question how many residents of the State would remain unprotected living in homes smaller than the proposed threshold. I struggle to understand the reasoning behind the square footage requirement and can't imagine its origin.

In this day and age, why when we have the proven technology to drastically reduce the number of citizens that perish in their homes, would we choose to overlook so many? Please apply common sense to the MSBC and adopt Mr. Pilette's proposed revisions to **5313.4 Automatic Sprinkler Systems** and make a statement for others to follow. Residential Fire Sprinklers.... It's time has come.

Sincerely,


Michael J. O'Donoghue

6-12-06

Mr. Robert Anderson
Department of Public Safety
Board of Building Regulations and Standards
1 Ashburton Place, Room 1301
Boston, MA. 02108-1618

Subject: Reconsideration To Proposed Fire Sprinkler Requirements

Dear Mr. Anderson,

I am writing to question the proposed change to the MSBC regarding Section 5313.4 "Sprinklers". When one considers the residential fire death toll in the US and single family homes, it seems rather illogical that homes greater than 14,400 sq. ft (even with total aggregate included, i.e. basements) would be the only homes to be protected. I would have to question how many residents of the State would remain unprotected living in homes smaller than the proposed threshold. I struggle to understand the reasoning behind the square footage requirement and can't imagine its origin.

In this day and age, why when we have the proven technology to drastically reduce the number of citizens that perish in their homes, would we choose to overlook so many? Please apply common sense to the MSBC and adopt Mr. Pilette's proposed revisions to **5313.4 Automatic Sprinkler Systems** and make a statement for others to follow. Residential Fire Sprinklers.... It's time has come.

Sincerely,



Carlos Ortiz

6-12-06

Mr. Robert Anderson
Department of Public Safety
Board of Building Regulations and Standards
1 Ashburton Place, Room 1301
Boston, MA. 02108-1618

Subject: Reconsideration To Proposed Fire Sprinkler Requirements

Dear Mr. Anderson,

I am writing to question the proposed change to the MSBC regarding Section 5313.4 "Sprinklers". When one considers the residential fire death toll in the US and single family homes, it seems rather illogical that homes greater than 14,400 sq. ft (even with total aggregate included, i.e. basements) would be the only homes to be protected. I would have to question how many residents of the State would remain unprotected living in homes smaller than the proposed threshold. I struggle to understand the reasoning behind the square footage requirement and can't imagine its origin.

In this day and age, why when we have the proven technology to drastically reduce the number of citizens that perish in their homes, would we choose to overlook so many? Please apply common sense to the MSBC and adopt Mr. Pilette's proposed revisions to **5313.4 Automatic Sprinkler Systems** and make a statement for others to follow. Residential Fire Sprinklers.... It's time has come.

Sincerely,

A handwritten signature in black ink, appearing to read "Ed Pacitto", with a long horizontal line extending to the right.

Ed Pacitto

BCAP

COMMENTS

- C61

- 6107.3 SOFTWARE

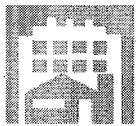
- 6107.3.2 ENVELOPE

- 6107.3.3 SUBMITAL

- 6108 SYS ANALYSIS

- 6109 HERS

- 6104 CNSTN DOCS



• B C A P •

Building Codes Assistance Project

Accelerating Implementation of Building Energy Codes

May 23, 2006

Tom Riley
Code Development Manager
Massachusetts Board of Building Regulations and Standards
One Ashburton Place, Room 1301
Boston, Massachusetts, 02118

Dear Mr. Riley,

I offer this letter on behalf of the Building Codes Assistance Project in general support of the proposed amendments to the energy efficiency provisions for one- and two-family dwellings of the upcoming Seventh Edition of 780 CMR. These are found in Chapter 61 of the proposed draft document, and are intended to replace Appendix J of the current (sixth) edition of the code.

I am in a somewhat unique position to comment on this matter, having worked for BBRS to promote the energy code when it was last updated. During that time I also served the Board's Energy Advisory Committee in the development of these proposed Seventh Edition changes. I raise this point to underscore that the EAC felt that the efficiency improvements in this draft were needed *five years ago*, when they were drafted. With recent electricity, oil, and natural gas price increases, they are that much more needed now.

The improvements in the Seventh Edition draft proposal are significant, both in terms of stringency and format. The proposed code is simpler to understand, having deleted an unwieldy set of some thirty prescriptive alternatives that were based on multiple climate zones and glazing percentages, and replacing them with a single prescriptive table that would apply to all houses throughout the state. This approach is easier for both compliance and enforcement, and was developed partly in response to the results of an evaluation that was performed to assess the impact of Appendix J. That study determined that almost no one was using the complicated prescriptive tables, and instead were making use of MAScheck (later REScheck) compliance software. The EAC utilized the new streamlined structure that was being developed by the US Department of Energy and that finally was incorporated into the 2006 IECC.

I say that I offer "general" support because the proposed changes are a definite improvement over the current requirements, which were adopted nearly ten years ago. It should be pointed out, however, that the EAC draft was developed in 2001, before the new IECC was reviewed, discussed, and approved, and

A Joint Initiative of The Alliance To Save Energy,
The American Council for an Energy-Efficient Economy, and
The Natural Resources Defense Council

94 Grove St #2 • Providence, RI 02909 • Tel: (401) 273-0263

therefore has some "rough edges" that were polished in the national version. The proposed Chapter 61 contains four alternative approaches to demonstrating compliance. One of these (the simple prescriptive approach of Section 6107.2) is fundamentally sound; the Board may decide to modify the specific values in the table, but the approach is solid. The other three (6107.3 Design by Approved Software, 6108 Design by Systems Analysis, and 6109 Design by Home Energy Rating) each need some updating to ensure that the intention of the code is met. I offer detailed recommendations below to ensure that the Seventh Edition is brought up to date on some developments in software and Home Energy Rating procedures.

1. Section 6107.3 – Building design by approved software

Perhaps the most important comment I have to make concerns REScheck software, which carries the potential to make the Seventh Edition *ineffectual* if not addressed properly. If the proposed draft is approved by the Board and adopted as the new code, it is essential that correspondingly new software be mandated along with it. The Sixth Edition prescriptive tables reflected the stringency of the code as it stood ten years ago, and were developed using old MECcheck software which supported the 1995 Model Energy Code. If the new simple prescriptive Table 6107.1 is adopted in Massachusetts, then software which captures that level of efficiency must also be adopted. If not, and if designers and builders continue using software which supported the old code, then the efficiency gains will be on paper only. New REScheck software is currently being developed by the US Department of Energy to support the 2006 IECC, which is essentially the same as the proposed Seventh Edition with a single exception of wall R-value. This new software should be available this summer or fall. If the Massachusetts code differs from the 2006 IECC, then BBRs can request a customized modification to the software, as it has in the past. Section 601.7.3 should therefore be amended as follows (in underline and ~~striketrough~~):

- **6017.3.2 Envelope requirements.** To determine compliance with the various wall, roof and floor assemblies, and heating and/or cooling system efficiencies, a REScheck ~~Version 3.7, Release 1b or later variant~~ Software analysis must be completed, and it must indicate a compliant or passing design. ~~the "Your UA" value must be less than or equal to the "Max. UA" value calculated by the software.~~ BBRS will designate allowable versions of REScheck, or other approved software.
- **6017.3.3 Submittal.** The "Compliance Report" and "Inspection Checklist" of the REScheck Program shall be submitted to the local building department before a permit is issued. ~~A window schedule including the areas (based on rough openings), and the number of windows, skylights, and other glazed fenestration, shall also be submitted.~~

2. Section 6108 – Building Design by Systems Analysis

This section is intended to lay out the rules for performing a comprehensive energy analysis in lieu the relatively simple approaches in 6107. As drafted, 6108.2 directs users to the commercial energy provisions of 780 CMR Chapter 13, Sixth Edition. This is unfortunate because there is an available alternative that has been developed precisely for residential energy analysis. The draft section 6108 should be entirely replaced with Section 404 of the 2006 IECC ("Simulated Performance Alternative") which provides comprehensive guidance

on conducting the kind of computer simulation needed to clearly determine code compliance. There will need to be minor editorial changes so that internal references to Chapter 61 are correctly maintained.

- a. Insert Table 402.1.3 from 2006 IECC, with only the values for Climate Zone 5, and renumbered as Table 6108.1, as follows:

Table 6108.1
Equivalent U-Factors^a

Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor	Floor U-Factor	Basement U-Factor	Crawl Space Wall U-Factor
0.35	0.60	0.030	0.060	0.082	0.033	0.059	0.065

a. Nonfenestration U-Factors shall be obtained from measurement, calculation or an approved source.

- b. Renumber IECC Section headings 404.x as 6108.x throughout.
- c. Insert IECC Tables 404.5.2(1) and 404.5.2(2) in their entireties, including footnotes, renumbered as Tables 6108.2(1) and 6108.2(1).
- d. Replace IECC references in particular sections as follows:

2006 IECC Section	IECC Reference	Proposed Ch 61 Modification
404.2	Sections 401, 402.4, 402.5, 402.6, and 403	6101, 6106.3, 6106.2.1, and 6106.4
Throughout	Table 404.5.2(1)	Table 6108.2(1)
Throughout	Table 404.5.2(2)	Table 6108.2(2)
404.5.2	reference notes in Table 402.1.1	Strike
404.6.2	404	6108
404.6.3	402, 403, and 404	6106.2, 6106.4, and 6108
Table 404.5.2(1)	Table 402.1.3	Table 6108.1
Table 404.5.2(1)	Table 402.1.2	Table 6107.1

3. Section 6109 – Building Design by Home Energy Rating

This approach to demonstrating compliance is useful, and eliminates duplicated effort for builders who are already having a thorough energy analysis performed on their home as part of participation in a "beyond code" program such as ENERGY STAR Homes. The proposed draft maintains the Sixth Edition code language, and says that a HERS score of 83 points or higher is deemed to comply. It also cites "HERS Council" guidelines as establishing the national criteria for an acceptable HERS rating. The details of both these issues need to be updated to reflect changes in the national Home Energy Rating system, which are due to take effect in July 2006. Specifically, the HERS rating scale has been inverted so that now *lower* numbers mean greater efficiency. Also, the industry's oversight entity is no longer the HERS Council. The following modifications (in underline and ~~strikethrough~~) will bring the section up to date.

- **6109.1 General:** A proposed building, for which the builder or the buyer obtains a Home Energy Rating by an accredited Home Energy Rating System (HERS), will be considered to comply with the intent of ~~Appendix J~~ this

chapter if the rating score on the building is ~~83.0 or more points~~, 105 or fewer points.

- **6109.1.2 Rating Score:** The ~~minimum~~ maximum compliance score of ~~83 points~~ 105 points will be based on the ~~*national HERS Council's guidelines for Home Energy Ratings-2006 Mortgage Industry National Home Energy Rating Systems Standards*~~, and the rating score shall be determined with an acceptable software analysis program as required by RESNET accreditation procedures, ~~on a scale of 0-100 points~~.
- **6109.2 Documentation:** A compliance report which includes a proposed Energy Rating score of ~~83.0 or more points~~, 105 or fewer points, a description of the building's energy features, and a statement that the rating score is "based on plans" will be required for issuance of a building permit. A copy of the final rating certificate indicating the score of ~~83.0 or more points~~, 105 or fewer points for the finished building will be submitted to the building official before the Certificate of Occupancy is issued.

4. Section 6104 – Construction Documents

Finally, I recommend incorporating another element of the 2006 IECC which requires a permanent certificate to be affixed in the building with detailed information on the insulation, fenestration, and HVAC systems. This is Section 401.3 in the 2006 IECC, which should be renumbered as 6104.3. It reads as follows:

- **6104.3 Certificate.** A permanent certificate shall be posted on or in the electrical distribution panel. The certificate shall be completed by the builder or registered design professional. The certificate shall list the predominant R-values of insulation installed in or on the ceiling/roof, walls foundation (slab, basement wall, crawlspace wall and/or floor) and ducts outside conditioned spaces; U-factors for fenestration; and solar heat gain coefficient (SHGC) of fenestration. Where there is more than one value for each component, the certificate shall list the value covering the largest area. The certificate shall list the type and efficiency of heating, cooling and service water heating equipment.

In summary, I commend the EAC for their efforts in developing improvements to the one- and two-family energy code, and I encourage Board to adopt the proposed Chapter 61 with the modifications specified above. I know that this matter will be treated with the seriousness required during these troubling times in the nation's and the region's energy needs. The Northeast is particularly hard hit when it comes to energy use in buildings; with a combination of high prices and harsh conditions, Massachusetts is the right place for improving its energy code significantly. Now is the right time to do so.

Sincerely,

David Weitz
Executive Director

NAIMA

COMMENTS

C61

R21 walls v. R19 walls

SUPPORTS HIGHER

"R" VALUES

* NOTE SUPPORTING MTLs

FILED ARE EXTENSIVE

& NOT PRESENTED HERE

BUT ARE AVAILABLE

UPON REQUEST.



June 21, 2006

Mr. Gary Moccia
Chairman
Board of Building Regulations and Standards
Department of Public Safety
One Ashburton Place – Room 1301
Boston, MA 02108

Dear Chairman Moccia,

Thank you for the opportunity to provide additional comments following my testimony at the May 23, 2006 public hearing in Boston regarding the proposed building code update for the Commonwealth of Massachusetts.

The North American Insulation Manufacturers Association (NAIMA) supports the Massachusetts code change proposal, in particular Chapter 61 regarding energy efficiency. When I testified at your hearing in May, I was speaking on behalf of the Responsible Energy Codes Alliance (RECA). NAIMA supports and wishes to reinforce the written comments filed by RECA.

In addition, NAIMA now wishes to respond to insulation-specific issues raised at the hearing. You will recall that a number of people testified against your proposed increase in wall R-values. You are proposing R-21 for walls, which is consistent with the 2004 Supplement to the International Energy Conservation Code (IECC). The Department of Energy analysis of the 2004 IECC that was cited by one individual at the hearing was withdrawn last year when it was shown to be flawed and incomplete. Please find attached a more comprehensive analysis of that wall R-value increase, which demonstrates that this level of energy efficiency can be achieved cost-effectively in Massachusetts and across the country when various insulation scenarios are considered. In fact, several construction types promoted by the Department of Energy use cellulose and spray foam insulation and meet the R-21 levels. (See attached.)

During the testimony regarding R-values, another individual suggested that R-value may be discounted for air infiltration. This is not true. The Federal Trade Commission ("FTC") maintains exclusive jurisdiction over R-value claims pursuant to 16 C.F.R. Part 460 – Labeling and Advertising of Home Insulation. This codified rule is better known as the R-value Rule. There is absolutely no provision or language within the R-value Rule that explicitly, implicitly or even slightly hints at the notion that R-value may be discounted for air infiltration or any other factor. Such a claim is without foundation.

In fact, according to the FTC, R-value is the "one significant piece of information that measures insulation effectiveness without which consumers cannot make rational

purchasing decisions.”¹ Indeed, the public record relied upon by the FTC to justify the establishment of R-value as the ultimate arbiter of thermal performance overwhelmingly bore out that “the R-value of an insulation material is the only existing measurement that enables the consumer to compare thermal performance of competing insulations.”² With uncompromising certitude, the FTC rejected other measurements that might be used to gauge thermal performance: “Nor is there any other performance yardstick suited to the purpose . . . R-value ‘is the only quantifiable . . . measure of thermal resistance that might provide the typical consumer with a means to evaluate insulation products’.”³

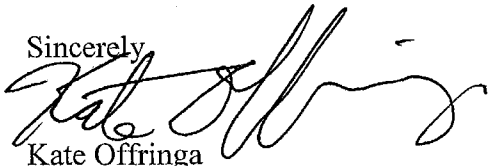
NAIMA notes that the R-value Rule specifically prohibits the enactment of any state or local laws or regulations “that are inconsistent with or frustrate the purpose of”⁴ the R-value Rule. Therefore, any State or local requirement that alters or contradicts the R-value Rule would be preempted.⁵

Certainly, air sealing is an important issue in building construction. Specific air sealing measures are already incorporated in the IECC as separate requirements. Section 402.4 Air Leakage in the IECC requires all “joints, seams and penetrations” be “caulked, gasketed, weatherstripped or otherwise sealed.” Insulation R-value and air sealing are separate issues. Massachusetts should be sure to address them separately as is the case in the IECC.

As you know, NAIMA is the association for North American manufacturers of fiber glass, rock wool, and slag wool insulation products. Its role is to promote energy efficiency and environmental preservation through the use of fiber glass, rock wool, and slag wool insulation. NAIMA’s members are Aislantes Minerales, CertainTeed Corporation, Evanite Fiber Corporation, Fibrex Insulations, Guardian Building Products, Industrial Insulation Group, Isolatek International, Johns Manville, Knauf Insulation, Owens Corning, Rock Wool Manufacturing, Roxul, Inc., Sloss Industries, Thermafiber, Inc, and USG Interiors.

NAIMA supports your efforts to achieve increased energy efficiency levels through building codes and encourages the Commonwealth of Massachusetts to pursue energy efficiency as a cost-effective energy strategy for meeting the needs of and providing benefits to its citizens.

Sincerely,



Kate Offringa

Director, Federal and State Programs

cc: Mr. Robert A. Anderson, Deputy Administrator, BBRS

¹ 44 Fed. Reg. 50,018, 50,221 (August 27, 1979).

² *Ibid.*

³ *Ibid.*

⁴ 16 C.F.R. § 460.23(b).

⁵ *Ibid.*

Riley, Tom (BBR)

From: John Goodrich [JGoodrich@trussec.com]
Sent: Friday, June 23, 2006 4:07 PM
To: Tom Riley
Cc: Richard Zimmermann
Subject: Mass Code Proposed changes

Attached are 6 proposed changes the truss industry would like to see in the Massachusetts Building Code, Seventh Edition. Please process them as required, prior to the deadline of June 24, 11:59:59 PM. I look forward to presenting them formally at the open session on Tuesday, June 27. Thank you for your guidance and timely responses.

Sincerely,
John Goodrich
Senior Designer
Truss Engineering Corporation
181 Goodwin Street
P.O. Box 51027
Indian Orchard, MA 01151
(413) 543-1298 Phone
(413) 543-1847 Fax
www.trussec.com

6/26/2006



Argeo Paul Cellucci
Governor
Jane Swift
Lieutenant Governor
Jane Perlov
Secretary

The Commonwealth of Massachusetts
Executive Office of Public Safety
Board of Building Regulations and Standards
One Ashburton Place - Room 1301
Boston, MA 02108

Tel: (617) 727-7532 Fax: (617) 227-1754

Kentaro Tsutsumi
Chairman
Thomas L. Rogers
Administrator

MASSACHUSETTS STATE BUILDING CODE - CODE AMENDMENT PROPOSAL

Please Print		State Use Only	
Date:	5/21/06	Date Received:	
Code Section:	5502.11.4 & 5802.10.1	Code Change Number::	
Proponent: John Goodrich, representing WTCA-Northeast			
Address: Truss Engineering Corporation 181 Goodwin St. • Indian Orchard, MA 01151			
Telephone: 413/543-1298 x12		Fax:: 413/543-1847 fax	

Check (3) type of amendment proposed

- | | |
|--|--|
| <input checked="" type="radio"/> X Change Section as follows | <input type="radio"/> Delete section and substitute as follows |
| <input type="radio"/> Add new section as follows | <input type="radio"/> Delete section - no substitute |

Text of Proposed Amendment::

The two sections are presented together since the language is the same at both

5502.11.4 Truss design drawings. Truss design drawings, prepared in compliance with Section 5502.11.1, shall be provided to the building official ~~and approved prior to installation.~~ at the time of inspection. Truss design drawing shall be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the information specified below:

5802.10.1 Truss design drawings. Truss design drawings, prepared in conformance with Section 5802.10.1, shall be provided to the building official ~~and approved prior to installation.~~ at the time of inspection. Truss design drawings shall include, at a minimum, the information specified below. Truss design drawing shall be provided with the shipment of trusses delivered to the jobsite.

Supporting Statements: Include supplementary material - use additional sheets if necessary

The sections are modified to allow the approval of truss design drawings by local building officials to occur at the time of the framing inspection, rather than at an undefined time prior to installation. Often times, the quote drawings and the construction drawings are different and this will prevent an inspector from receiving an incorrect design drawing. The truss design drawings are required to be provided with the shipment of trusses and will be available on the construction site for review by an inspector before or after installation.



Argeo Paul Cellucci
Governor

Jane Swift
Lieutenant Governor

Jane Perlov
Secretary

The Commonwealth of Massachusetts

Executive Office of Public Safety

Board of Building Regulations and Standards

One Ashburton Place - Room 1301

Boston, MA 02108

Tel: (617) 727-7532 Fax: (617) 227-1754

Kentaro Tsutsumi
Chairman

Thomas L. Rogers
Administrator

MASSACHUSETTS STATE BUILDING CODE - CODE AMENDMENT PROPOSAL

Please Print		State Use Only	
Date:	5/21/06	Date Received:	
Code Section:	Table R5301.5	Code Change Number::	
Proponent: John Goodrich, representing WTCA-Northeast			
Address: Truss Engineering Corporation 181 Goodwin St. • Indian Orchard, MA 01151			
Telephone: 413/543-1298 x12		Fax:: 413/543-1847 fax	

Check (3) type of amendment proposed

- | | |
|--|--|
| <input checked="" type="radio"/> X Change Section as follows | <input type="radio"/> Delete section and substitute as follows |
| <input type="radio"/> Add new section as follows | <input type="radio"/> Delete section - no substitute |

Text of Proposed Amendment::

Modify existing table for footnote references and add footnotes as follows

TABLE R5301.5
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS
(in pounds per square foot)

USE	LIVE LOAD
Attics with storage ^{b, g, h, i}	20
Attics without storage ^{b, h}	10
Decks ^e	40
Exterior balconies	60
Fire escapes	40
Guardrails and handrails ^d	200
Guardrails in-fill components ^f	50
Passenger vehicle garages ^a	50 ^a
Rooms other than sleeping rooms	40

For SI: 1 pound per square foot = 0.0479 kN/m², 1 square inch = 645 mm²,
1 pound = 4.45 N.

- Elevated garage floors shall be capable of supporting a 2,000-pound load applied over a 20-square-inch area.
- No storage with roof slope not over 3 units in 12 units.
- Individual stair treads shall be designed for the uniformly distributed live

- load or a 300-pound concentrated load acting over an area of 4 square inches, whichever produces the greater stresses.
- d. A single concentrated load applied in any direction at any point along the top.
 - e. See Section 5502.2.1 for decks attached to exterior walls.
 - f. Guard in-fill components (all those except the handrail), balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds on an area equal to 1 square foot. This load need not be assumed to act concurrently with any other live load requirement.
 - g. For attics with storage and constructed with trusses, this live load need be applied only to those portions of the bottom chord where there are two or more adjacent trusses with the same web configuration capable of containing a rectangle 42 inches high or greater by 2 feet wide or greater, located within the plane of the truss. The rectangle shall fit between the top of the bottom chord and the bottom of any other truss member, provided that each of the following criteria is met:
 - 1. The attic area is accessible by a pull-down stairway or framed opening in accordance with Section 5807.1; and
 - 2. The truss has a bottom chord pitch less than 2:12.
 - 3. Required Insulation depth is less than the bottom chord member depth

The bottom chords of trusses meeting the above criteria for storage shall be designed for the greater of the actual imposed dead load or 10 psf uniformly distributed over the entire span.
 - h. Attics without storage are those where the maximum clear height between joist and rafter is less than 42 inches, or where there are not two or more adjacent trusses with the same web configuration capable of containing a rectangle 42 inches high by 2 feet wide, or greater, located within the plan of the truss. For attics without storage, this live load need not be assumed to act concurrently with any other live load requirements.
 - i. Attic spaces served by a fixed stair shall be designed to support the minimum live load specified for sleeping rooms.

Supporting Statements: Include supplementary material - use additional sheets if necessary

The proposed provisions are similar to what is currently in Section 1606.1.2 of the 6th Edition of the MA Building Code and include the provisions of the 2006 IRC and what has been proposed for the 2009 IRC.

The 42-inch clearance as a threshold height for requiring the 20 psf live load has been established in the BOCA National Building Code since at least the 1962 code. The dimension is time-tested and there is no evidence of ceiling failures under this criterion.

The 10 psf load in attics without storage is for the purpose of allowing occasional access to the space for maintenance. Non-concurrency with other live loads is appropriate for this circumstance, since it is rare for all maximum live loads to occur at once and there is sufficient conservatism in the design of trusses to accommodate a rare circumstance. In addition, to require the access load to be concurrent would also imply that the design of walls and foundations should take into consideration the additional live load, which they do not.

In attic areas that have sufficient clearance for significant storage, it is reasonable to assume that it is the higher clearance areas that will be used for storage as well as access for maintenance, and not the low – clearance areas that are obstructed by truss webs. It is excessive to require the 10 psf live load in those areas when there are adjacent easily accessible areas which are designed for 20 psf. However, a minimum dead load of 10 psf in the low clearance areas has been added by this modification, in response to concerns raised by opponents that the previous BOCA criteria contained a minimum dead load assignment. The same minimum dead load has been added here so that the criteria are now nearly identical to what had been required in the BOCA code.

This proposed modification contains criteria for attic loading that has been used for decades in many areas of the country without failures. It will provide the direction that is currently lacking in the IRC for

residential attic loading, while being consistent with action taken by the ICC in the IRC and IBC 2006.



Argeo Paul Cellucci
Governor

Jane Swift
Lieutenant Governor

Jane Perlov
Secretary

The Commonwealth of Massachusetts

Executive Office of Public Safety

Board of Building Regulations and Standards

One Ashburton Place - Room 1301

Boston, MA 02108

Tel: (617) 727-7532 Fax: (617) 227-1754

Kentaro Tsutsumi
Chairman

Thomas L. Rogers
Administrator

MASSACHUSETTS STATE BUILDING CODE - CODE AMENDMENT PROPOSAL

Please Print		State Use Only	
Date:	5/21/06	Date Received:	
Code Section:	Table 53015	Code Change Number::	
Proponent: John Goodrich, representing WTCA-Northeast			
Address: Truss Engineering Corporation 181 Goodwin St. • Indian Orchard, MA 01151			
Telephone: 413/543-1298 x12		Fax:: 413/543-1847 fax	

Check (3) type of amendment proposed

- | | |
|--|--|
| <input checked="" type="radio"/> X Change Section as follows | <input type="radio"/> Delete section and substitute as follows |
| <input type="radio"/> Add new section as follows | <input type="radio"/> Delete section - no substitute |

Text of Proposed Amendment::

Modify existing table for footnote reference and add footnotes as follows

TABLE R5301.5
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS
(in pounds per square foot)

USE	LIVE LOAD
Attics with storage ^{b, g}	20
Attics without storage ^{b, g}	10
Decks ^e	40
Exterior balconies	60
Fire escapes	40
Guardrails and handrails ^d	200
Guardrails in-fill components ^f	50
Passenger vehicle garages ^a	50 ^a
Rooms other than sleeping rooms	40

For SI: 1 pound per square foot = 0.0479 kN/m², 1 square inch = 645 mm²,
1 pound = 4.45 N.

g. All live load shall be applied to joists or to bottom chords of trusses or trussed rafters only in those portions of attic space having a clear height of 42 inches (1067 mm) or more between joist and rafter in

conventional rafter construction; and between bottom chord and any other member in trusses or trussed rafter construction. However, joists or the bottom chords of trusses or trussed rafters shall be designed to sustain the imposed *dead load* or ten psf (49 kg/m²), whichever is greater, uniformly distributed over the entire span. A further ceiling dead-load reduction to a minimum of five psf (24 kg/m²) or the actual *dead load*, whichever is greater, applied to joists in conventional rafter construction or to the bottom chords of trusses or trussed rafters is permitted under either or both of the following conditions:

1. Where the clear height is not over 30 inches (762 mm) between joist and rafter in conventional construction and between the bottom chord and any other member for trusses or trussed rafter construction.
2. Where a clear height of greater than 30 inches (762 mm), as defined in item 1, does not exist for a horizontal distance of more than 12 inches (305 mm) along the member.

Supporting Statements: Include supplementary material - use additional sheets if necessary

This language is identical to what is in Section 1606.1.2 of the current edition of the MA Building Code and provides clarification missing in the 2003 edition of the International Residential code.



Argeo Paul Cellucci
Governor

Jane Swift
Lieutenant Governor

Jane Perlov
Secretary

The Commonwealth of Massachusetts

Executive Office of Public Safety

Board of Building Regulations and Standards

One Ashburton Place - Room 1301

Boston, MA 02108

Tel: (617) 727-7532 Fax: (617) 227-1754

Kentaro Tsutsumi
Chairman

Thomas L. Rogers
Administrator

MASSACHUSETTS STATE BUILDING CODE - CODE AMENDMENT PROPOSAL

Please Print		State Use Only	
Date:	5/21/06	Date Received:	
Code Section:	5802.10.5 & 5802.11	Code Change Number::	
Proponent: John Goodrich, representing WTCA-Northeast			
Address: Truss Engineering Corporation 181 Goodwin St. • Indian Orchard, MA 01151			
Telephone: 413/543-1298 x12		Fax:: 413/543-1847 fax	

Check (3) type of amendment proposed

- | | |
|--|--|
| <input checked="" type="radio"/> X Change Section as follows | <input type="radio"/> Delete section and substitute as follows |
| <input type="radio"/> Add new section as follows | <input type="radio"/> Delete section - no substitute |

Text of Proposed Amendment::

R5802.10.5 Truss to wall connection. Trusses shall be connected to wall plates by the use of approved connectors having a resistance to uplift of not less than 175 pounds (79.45 kg.) and shall be installed in accordance with the manufacturer's specifications. For roof assemblies subject to wind uplift pressures of 20 pounds per square foot (0.958 kN/m²) or greater, as established in Table R5301.2(2), adjusted for height and exposure per Table R5301.2(3), see section R5802.11.

R5802.11 Roof tie-down.

R5802.11.1 Uplift resistance. Roof assemblies which are subject to wind uplift pressures of 20 pounds per square foot (0.958 kN/m²) or greater shall have roof rafters or trusses attached to their supporting wall assemblies by connections capable of providing the resistance required in Table R5802.11. Wind uplift pressures shall be determined using an effective wind area of 100 square feet (9.3m²) and Zone 1 ~~the applicable wind zone~~ in Table R501.2(2), as adjusted for height and exposure per Table R5301.2(3).

Exception: For trusses designed per Section R5802.10.2, the connections shall resist the uplift force, if any, specified on the Truss Design Drawing. In areas where the basic wind speeds do not exceed 90 mph, truss to wall connections shall be permitted to be in accordance with rafter connections per Table R5602.3(1).

A continuous load path shall be provided to transmit the uplift forces from the rafter or truss ties to the foundation.

Supporting Statements: Include supplementary material - use additional sheets if necessary

The purpose of the code change is to clarify the code and remove possibly onerous requirements. Wood trusses are required to provide uplift forces on a code required Truss Design Drawing per Section R5802.10.1, item #6.

The current section R5802.10.5 text is confusing in a number of ways. It creates an inconsistency between truss-to-wall and rafter-to-wall connections. It is not clear whether toe-nails are an approved connector, and as a result causes enforcement problems. The 175 pound connector capacity is arbitrary, and it is not clear what to do if the uplift force is larger than 175 pounds. It does not clearly state where this uplift force comes from. It also appears to disallow toe-nailing as a valid connection, even though provisions for toe-nailing are provided in the National Design Specification® for Wood Construction (NDS®). This section, as written causes unnecessary additional cost..

The current section R5802.10.5 appears to require metal connectors regardless of the truss uplift forces. Many trusses, particularly those with very short spans such as in hip sets, are subject to far lower uplift forces. It seems unreasonable and unnecessary to require pre-manufactured metal connectors for such trusses, especially when properly-installed toe-nailing provides adequate resistance and are recognized by the NDS®.

The current section does not account for distribution of lateral loads, where a toe-nailed connection may be far superior in capacity when compared to a standard pre-manufactured connector.

Section R5802.10.3 Bracing includes a reference to TPI/HIB. This reference is out of date and a separate proposal has been made to change the current reference from HIB to BCSI 1. This industry guideline for handling, installing and bracing metal plate connected wood trusses also includes a section on toe-nailing for uplift. A sample is included from BCSI 1, Section B-8. Please note that the values in this table are for normal load duration and have not been increased for wind load applications.

UPLIFT RESISTANCE OF TOE-NAILED CONNECTIONS **RESISTENCIA A EL LEVANTAMIENTO DE CONECCIONES** **DE CLAVADO OBLICUAMENTE**

Find the nominal uplift value in Table 1 based on type of nail and species of top plate. For example, three 16d common nails toe-nailed into a Southern Pine top plate will provide 216 lbs. (3 x 72 lbs.) of nominal uplift resistance.

Table 1: Nominal Uplift Design Capacity per Toe-Nail

Tabla 1: Capacidad de diseño de levantamiento nominal por clavado-oblicuamente.

Based on NDS-97 & NER-272

Nail Type	Inches		Value for Top Plate Species				
	Diam.	Len.	Pounds				
			SP	DF-L	HF	SPF	SPFs
16d Gun Nail	0.131	3.5	58	46	32	30	20
12d Gun Nail	0.120	3.25	50	39	27	25	17

The proposed text changes will clarify the code requirements, will reduce construction cost, and will help ensure that connections between the trusses and walls are adequate for the appropriate design loads. It makes enforcement easier because code compliance confusion is eliminated and the building official can clearly ask the builder or homeowner to show that design uplift forces are being resisted properly.



Argeo Paul Cellucci
Governor
Jane Swift
Lieutenant Governor
Jane Perlov
Secretary

The Commonwealth of Massachusetts
Executive Office of Public Safety
Board of Building Regulations and Standards
One Ashburton Place - Room 1301
Boston, MA 02108

Tel: (617) 727-7532 Fax: (617) 227-1754

Kentaro Tsutsumi
Chairman
Thomas L. Rogers
Administrator

MASSACHUSETTS STATE BUILDING CODE - CODE AMENDMENT PROPOSAL

Please Print		State Use Only	
Date:	5/21/06	Date Received:	
Code Section:	5802.10.3 & 5502.11.2	Code Change Number::	
Proponent: John Goodrich, representing WTCA-Northeast			
Address: Truss Engineering Corporation 181 Goodwin St. • Indian Orchard, MA 01151			
Telephone: 413/543-1298 x12		Fax:: 413/543-1847 fax	

Check (3) type of amendment proposed

- | | |
|--|--|
| <input checked="" type="radio"/> X Change Section as follows | <input type="radio"/> Delete section and substitute as follows |
| <input type="radio"/> Add new section as follows | <input type="radio"/> Delete section - no substitute |

Text of Proposed Amendment::

R5802.10.3 Bracing. Trusses shall be braced to prevent rotation and provide lateral stability in accordance with the requirements specified in the construction documents for the building and on the individual truss design drawings. In the absence of specific bracing requirements, trusses shall be braced in accordance with the TPI, HIB Building Component Safety Information (BCSI 1-03) Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses.

R5502.11.2 Bracing. Trusses shall be braced to prevent rotation and provide lateral stability in accordance with the requirements specified in the construction documents for the building and on the individual truss design drawings. In the absence of specific bracing requirements, trusses shall be braced in accordance with the TPI, HIB Building Component Safety Information (BCSI 1-03) Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses.

Supporting Statements: Include supplementary material - use additional sheets if necessary

HIB-91 is no longer produced. WTCA and TPI have developed the BCSI 1 booklet to replace HIB-91. The benefit of making this change is to improve truss safety using state-of-the-art truss industry recommendations that have been developed since HIB-91 and will be developed in the future as the truss industry refines bracing techniques and knowledge.

Note: BCSI 1 is not a referenced standard, but is an industry guide. Therefore it is not included with the referenced standards in Chapter 100.

The following announcement on this industry publication change was made in January 2004.



TO: Building/Government Officials and Specifiers

FROM: Bill Turnbull, TPI President & Dan Holland, WTCA President

DATE: January 20, 2004

SUBJECT: **Updated Truss Safety Information from TPI and WTCA**

The Truss Plate Institute (TPI) and the Wood Truss Council of America (WTCA) jointly announce the release of the new Building Component Safety Information Booklet (BCSI 1-03) and related summary sheets. These new documents will replace TPI's "Handling, Installing & Bracing" (HIB) Booklet and summary sheet, and WTCA's Warning Poster and *Truss Technology in Building* documents addressing jobsite safety when building with trusses.

As background, in 1976, TPI, in cooperation with its Component Manufacturers Council, published the *Commentary & Recommendations for Bracing of Wood Trusses* (BWT-76), which provided temporary erection bracing details as well as commentary for Truss Designers to use as a guide for component bracing and Building Designers to use as a guide for permanent bracing. Derivative documents were also created such as *Handling & Erecting Wood Trusses* (HET-80) and WTCA's *Job Site Warning Poster* (WTCA-B1) in 1983.

In 1989, TPI released *Recommended Design Specifications for Structural Bracing of Metal Plate Connected Wood Trusses* (DSB-89), which outlined more thoroughly the topic of bracing, and provides an engineering design methodology. DSB-89 was intended to provide guidance on the design of structural bracing primarily for technical audiences such as licensed design professionals (i.e., architects, engineers, truss designers, etc.).

Based on these new guidelines, TPI published the *Commentary & Recommendation for Handling, Installing and Bracing for MPC Wood Trusses* (HIB-91 Booklet and HIB-91 Summary Sheet), to provide guidance on job-site handling, installing and temporary bracing issues.

In March, 1998, TPI held a focus group session with truss installers and framers to understand temporary bracing from the perspective of those that actually have to implement bracing techniques. The conclusion coming out of this focus group was that "truss installers need a more simplified presentation to understand temporary bracing."

Based on this valuable input, the WTCA Executive Committee and TPI Board of Directors worked together to provide updated bracing information for the field. This resulted in the development of the Building Component Safety Information series of documents called


BCSI 1-03, which is now complete and can be viewed at
http://www.woodtruss.com/images/publication_images/bcsi103.pdf

Implementation of the BCSI 1-03 and its B-series summary sheets is taking place now. Our industry realizes there will be a transition period for users and specifiers to adopt and adapt to the updated safety information. We believe that our industry's improved documents will cause the transition to proceed quickly.

Respectfully Yours,



William T. Turnbull
President of TPI



Daniel N. Holland
President of WTCA



Argeo Paul Cellucci
Governor
Jane Swift
Lieutenant Governor
Jane Perlov
Secretary

The Commonwealth of Massachusetts
Executive Office of Public Safety
Board of Building Regulations and Standards
One Ashburton Place - Room 1301
Boston, MA 02108

Tel: (617) 727-7532 Fax: (617) 227-1754

Kentaro Tsutsumi
Chairman
Thomas L. Rogers
Administrator

MASSACHUSETTS STATE BUILDING CODE - CODE AMENDMENT PROPOSAL

Please Print		State Use Only	
Date:	5/21/06	Date Received:	
Code Section:	5502.10.1 & 5802.10.2	Code Change Number::	
Proponent: John Goodrich, representing WTCA-Northeast			
Address: Truss Engineering Corporation 181 Goodwin St. • Indian Orchard, MA 01151			
Telephone: 413/543-1298 x12		Fax:: 413/543-1847 fax	

Check (3) type of amendment proposed

- | | |
|--|--|
| <input checked="" type="radio"/> X Change Section as follows | <input type="radio"/> Delete section and substitute as follows |
| <input type="radio"/> Add new section as follows | <input type="radio"/> Delete section - no substitute |

Text of Proposed Amendment::

The two are presented together since the language is the same at both

5502.10.1 Design. Wood trusses shall be designed in accordance with accepted engineering practice. The design and manufacture of metal plate connected wood trusses shall comply with ANSI/TPI 1. The truss design drawings shall be prepared by or under the supervision of a Massachusetts registered architect or registered professional engineer.

5802.10.2 Design. Wood trusses shall be designed in accordance with accepted engineering practice. The design and manufacture of metal plate connected wood trusses shall comply with ANSI/TPI 1. The truss design drawings shall be prepared by or under the supervision of a Massachusetts-registered architect or registered professional engineer.

Supporting Statements: Include supplementary material - use additional sheets if necessary

The requirements for the practice of architecture and engineering may be significantly different. We are proposing that the preparation of truss design drawings be limited to those individuals registered as professional engineers.

The following is from the Massachusetts statutes regarding the practice of architecture. Although it does not preclude the practice of engineering by an architect, it does require that architects only perform professional services for which they have competence.

4.01: Rules of Professional Conduct

An architect shall conform to the rules set forth in 231 CMR 4.00 and with the laws governing the practice of architecture. Departure therefrom by act or omission shall be deemed to constitute misconduct warranting disciplinary action by the Board. **Such disciplinary actions shall be reported to NCARB for publication to other jurisdictions.**

(1) Competence.

(a) In practicing architecture, an architect shall act with reasonable care and competence, and shall apply the technical knowledge and skill which is ordinarily applied by architects of good standing, practicing in the same locality.

(b) In designing a project, an architect shall take into account all applicable state and municipal building laws and regulations. While an architect may rely on the advice of other professionals (e.g., attorneys, engineers, and other qualified persons) as to the intent and meaning of such regulations, once having obtained such advice, an architect shall not knowingly design a project in violation of such laws and regulations.

(c) An architect shall undertake to perform professional services only when he or she, together with those whom the architect may engage as consultants, are qualified by education, training, and experience in the specific technical areas involved.

(d) No person shall be permitted to practice architecture if, in the Board's judgment, such person's professional competence is substantially impaired by physical or mental disabilities
